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PREFACE

THESE lectures, delivered in 1947-1948 at the University of Michigan and at the American Academy in Rome, are here published in accordance with the provisions of the Thomas Spencer Jerome Foundation. Some supplementary material and footnotes, not suitable for oral presentation, have been added.

To my colleagues, David Magie and Louis C. West in Classics and Frank D. Graham and Paul J. Strayer in Economics, I am indebted for criticism and suggestions. My debt to the host of papyrologists who have contributed to the interpretation of Egyptian papyri is obvious to anyone who reads these pages. I am deeply indebted to Professor Eugene S. McCartney, Editor of Scholarly Publications for the University of Michigan Press, who has generously contributed from his store of scholarship and experience many suggestions for the improvement of these studies.

During our stay in Rome, Director and Mrs. Laurance Roberts generously placed the facilities of the American Academy at our disposal and did everything in their power to make life more comfortable under postwar conditions. To the members of Departments of Classics and Archaeology at the University of Michigan and especially to Professor and Mrs. John G. Winter we owe a treasured memory of kindly hospitality.

A. C. J.

PRINCETON

March 31, 1949

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I

FIDUCIARY CURRENCY AND ITS REGULATION

WHEN coined money first came into use, it was a matter of convenience in commercial relations to have some guarantee of the weight and purity of the metal. The values were naturally determined by the law of supply and demand, but with gold and silver more or less limited in volume of production and in reasonably constant demand, the standard weights issued by a state were recognized as having some definite relation to each other, and in the course of time these various weights were given names which came ultimately to be symbols of value. This relationship was easily maintained so long as the coinage was issued on a single metallic standard. But when two or more metals came into use the maintenance of a fixed relation between them became a different problem, which never found a satisfactory solution. As a rule, the baser metal tended to become fiduciary. Fiduciary currency may be defined as that in which the value ascribed to the coin by the state bears no relation to that of its metal content. In modern times fiduciary currency is in universal use, but this development is comparatively recent.¹

The literary evidence for fiduciary currency is very slight. In a work attributed to Aristotle mention is made of the use of iron money at Clazomenae for payment of the army. This currency was distributed among the wealthy citizens in exchange for

silver to pay the soldiers' wages.² At Syracuse Dionysius borrowed from the citizens to build a fleet. Having no silver, he repaid the loan in coins of tin. Timotheus, the Athenian general in command of the siege of Olynthus, issued bronze tokens and persuaded the merchants to accept them for money. These were really examples of forced loans, and since the use of such coins was temporary, they can hardly be considered as examples of fiduciary money. Coins with a core of base metal and plated with gold or silver are not necessarily the work of ancient counterfeiters, but a comparison of these with official issues indicates that the state sometimes resorted to plated coinage, probably as a temporary measure in periods of economic stress. Aristophanes in the *Frogs* reveals the indignation of the Athenians over the debased coinage issued, apparently for home consumption, toward the end of the Peloponnesian War.³ As a rule, the commercial interests of the state combined with civic pride to maintain a high standard of purity of metal content and of weight in monetary issues.

Fiduciary currency on a national scale may have developed first at Sparta.⁴ According to tradition, the Spartans issued only iron money. Of this no specimens are preserved, although bundles of iron obelisci found in excavations are generally supposed to have been used for money. It is not unlikely that when iron first came into use it served as a medium of exchange, but as metallurgy improved and iron became cheap and abundant its value as a medium of exchange declined. Under Lycurgus, however, Sparta deliberately isolated herself from all contacts with the outside world; imports were eliminated so

far as possible, and if there were any, compensation was by barter. Under these conditions iron or any other metal could have served as money for local needs.

The rarity of gold and silver gave these metals a value which was unsuitable for doing business in low-priced commodities. For subdivisions of the drachma, such as the obol and the chalcous, bronze was used. The abundance of this metal and its fluctuating value made it difficult to maintain a constant ratio between bronze and silver; at any rate it is generally assumed that by the end of the fourth century before Christ subsidiary issues in bronze were fiduciary.⁵

While Sparta may have shown the way for the use of fiduciary currency in local requirements, most states preferred some measure of international trade, and these used gold or silver, not only for local, but also for foreign trade. In Egypt, however, we find that a double system developed. The Ptolemies began their rule with gold and silver coins of high standard, but mismanagement, extravagance, and costly internal and foreign policies gradually involved them in financial difficulties. The coinage for local use within Egypt was rapidly debased; by the middle of the first century before Christ the Alexandrian mint issued billon with a very low silver content; in their outlying dominions the old standards were maintained and these districts were able to trade with their neighbors as before.⁶ Egypt had a favorable balance of trade at all times, and did not require gold or silver to settle for purchases abroad.

When Augustus took possession of Egypt he confiscated the accumulations of gold and silver in the

royal treasuries⁷ and left the fiduciary billon in circulation for local needs. This is the coinage called Ptolemaic silver in the contemporary documents; but he issued no billon in his own name. Instead, he experimented with various issues of bronze in different sizes and weights, none of which were correlated with imperial issues. For the rest of the Empire gold and silver coins were placed in circulation with a ratio of approximately 1:12 which was probably their market value at the time.⁸ Bronze issues, nominally left under the control of the Senate, were fiduciary. Various cities were allowed the right to issue bronze for local use, but it is probable that the emperor exercised strict control over all issues.

Tiberius continued the Augustan system of bronze issues from the Alexandrian mint; in the year 20 he began to experiment with a new billon coin (82 per cent alloy, the rest silver), and ultimately adopted a coin with a silver content approximately that of the Roman denarius. This silver, however, could not be separated from its alloy by any process known to ancient metallurgists, and had little or no commercial value. The coin, called stater or tetradrachm, was equated officially with the Roman denarius or Attic drachma throughout its history.⁹

Five denominations of bronze on the Augustan pattern were issued from the Alexandrian mint during the first two centuries of Roman rule. Under Marcus Aurelius the two smaller issues were discontinued. As inflation in prices continued the need for small change ceased, and after Caracalla the largest size of bronze was issued only by Macrinus, Severus Alexander, Philip, Gallienus, and Aurelian. The billon tetradrachm of Tiberius was continued with

slight change until Marcus Aurelius dropped the silver content to about 4 per cent (171-178). Some of the later emperors restored some of the silver, and under Septimius Severus the analysis shows 10 per cent of the white metal. In the third century the silver content steadily declined, and under Diocletian, when its issue was abandoned, there was little more than one half of one per cent silver, which may have been due to impurities in the copper alloy.¹⁰

Although the numismatic evidence for the activity of the Alexandrian mint is clear enough, its correlation with the documentary evidence is a more complex problem. In other parts of the Roman Empire the documentary evidence is meager indeed, but in Egypt the papyri have furnished great numbers of tax registers, contracts, and private accounts in which current monetary terms are in constant use. The interpretation of these terms has presented problems on which there is no general agreement.

One of these problems, on which there is little dispute, may be briefly stated. Some of the tax registers, chiefly those dealing with garden lands in the Fayûm, calculate the taxes in what is called the copper standard.¹¹ In these registers the ratio of silver to copper is usually 1:300. All scholars seem to agree that this copper standard, however it originated, was a survival from Ptolemaic times, and that no issues from the Alexandrian mint in Roman times bore this relation to silver or billon. But this method of calculating taxes continued, especially on garden lands in the Fayûm, into the third century, and it furnishes a good example of the conservatism of accounting practices.

Furthermore, there is apparently no question that

the bronze currency in actual circulation in Egypt under Roman rule was limited to the issues from the Alexandrian mint. No Roman or provincial bronze issues appear in Egyptian hoards, and the sesterce is very rare in Egyptian accounts. Whatever the values assigned to the respective sizes of the Alexandrian bronze coins, it is quite certain that these issues were fiduciary, that the drachma of bronze had six obols, and that the obol had the value of eight chalci. Although there are numerous calculations of taxes which involve the single chalcous, the smallest unit in private documents is the half obol. Whether the chalcous was ever minted in Roman times or whether it was merely an accounting fiction, cannot be determined from the available evidence, but this problem is immaterial to the immediate discussion.¹²

The silver currencies mentioned in the papyri present a more difficult problem, and here we must take into consideration methods of accounting. From Augustus to Nero there is fairly frequent mention of Ptolemaic silver which had a drachma of six obols. Whether this was current in larger units than the drachma is unknown. It is generally agreed that the term describes the issues of the Ptolemies who, in the era preceding the Roman conquest, issued billon for local use in Egypt. Since Augustus took possession of all the gold and silver in the royal treasuries, he left only billon and bronze currency in local circulation. This billon in Roman times was evidently called Ptolemaic silver, and there is evidence that it was equated with Augustan silver, as both terms are linked together from Tiberius to Nero.

After Nero all mention of Ptolemaic silver disappears from the papyri except for sporadic examples in the latter part of the third century. Ptolemaic coins are also rare in post-Neronian hoards; it seems that they were called in under this emperor for reminting, and their use as legal tender was prohibited.¹³

Augustan silver first appears in the papyri late in the reign of Tiberius. As we have already observed, this was equated in value with the Ptolemaic silver. Since the latter was billon, it is probable that the term Augustan silver was used to describe the billon coin which first appeared in A.D. 20. The epithet minted (*ἐπιστημος*) is used of both Ptolemaic and Augustan silver, and apparently the word has no special significance. The coinage of the Roman period, however, is usually called silver, without any descriptive epithet, and here is where our troubles begin.

We have few accounts from the reigns of Augustus and Tiberius, but in all cases a drachma of six obols can be postulated.¹⁴ Beginning with Claudius documents may be divided into two groups. In tax registers generally the drachma has six obols as before. There are few exceptions to this rule. For example, the great tax rolls from Caranis, dated from 171 to 173, show that the garden taxes were calculated in silver drachmae of six obols, but the marginal entries seem to indicate that actual payments were made in tetradrachms of twenty-nine obols. Similarly, those who paid their poll tax were evidently required to pay in tetradrachms of twenty-nine obols. But in the vast majority of tax records the taxes were calculated on the basis of a silver drachma of six obols with eight chalci to the obol.¹⁵

Private accounts, from Claudius on, invariably show that the silver tetradrachm commanded a premium, for it was valued at twenty-six, twenty-seven, twenty-eight, or twenty-nine obols. The earliest example is found in the accounts of the record office at Tebtynis published by Professor Boak in the *Michigan Papyri*. Another interesting example appears in the farm account from Hermopolis at the close of Vespasian's reign. Here all receipts are recorded in silver while wages and other expenses are either in silver or in bronze coins. At the end of each month the bronze drachma of six obols was converted into its silver equivalent in order to balance the accounts. Sometimes the conversion was made at the rate of twenty-eight obols to the tetradrachm, sometimes at twenty-nine obols. This variation was seasonal and presumably was determined at the local exchange banks in accordance with the law of supply and demand.¹⁶

In the farm account from Hermopolis the bronze drachma was valued at six obols while the silver tetradrachm, as elsewhere in private accounts, commanded a premium. In the record office at Tebtynis and in military accounts the same premium is found. It is only in tax registers and in the calculation of taxes that the silver drachma of six obols is regularly used. Interest rates also appear to be calculated on the same basis, although it is impossible to tell when the legal rate of a drachma per mina per month is used. But when there is a calculation for a fraction of a month or for less than the legal rate of 12 per cent, the six-obol drachma is always used.

How are we to account for the different values of

the silver tetradrachm? Mommsen, writing before there was a large corpus of papyri available for study, suggested that the twenty-four-obol tetradrachm was the billon coin issued from the Alexandrian mint, and that the coin commanding a premium was actually the Roman denarius. The denarius of pure, or nearly pure, silver circulated freely in Egypt, nominally at par with the billon, but because of the purity of its silver commanded a slight premium.¹⁷

Because of the prestige of the author, Mommsen's theory has been widely accepted, but without critical examination of it in the light of the vast amount of new evidence. There are strong objections to its validity. It is not of great significance that the papyri seldom mention Roman monetary terms. The *gnomon* of the idiologus prescribed penalties in sesterces for Roman citizens resident in Egypt. Military accounts sometimes used Roman monetary terms, but the ostraca from the military camp at Pselkis show that the denarius and the Egyptian tetradrachm (twenty-nine obols) were regarded as synonymous. Hence the use of the word drachma in tax receipts and registers generally does not exclude the possibility that the silver drachma was used as equivalent to the denarius.

Although Gresham's law is not necessarily valid under all circumstances, yet it would require rigid control by the state to enable the denarius of pure, or nearly pure, silver to circulate at approximate equality with the billon tetradrachm for over two hundred years. After the denarius lost most of its silver content, it still continued to command a premium in the Egyptian market, if the silver drachma

is to be identified with it. According to Gresham's law, if good silver were put into circulation at approximate parity with purely fiduciary currency, the silver would naturally find its way into hoards. The evidence, however, of hundreds of hoards so far published has provided only one example of denarii. This hoard, purchased from an Egyptian dealer, was evidently collected about the end of the second century, but there can be no certainty that it was buried in Egypt, and the scientific value of its evidence must always be questioned.¹⁸ The complete lack of denarii in innumerable well-attested hoards is strong evidence that these coins were not in private circulation.

Mommsen seems to regard the bronze coins issued from the Alexandrian mint as the equivalent of those on the so-called copper standard which in Roman accounts was related to silver at the ratio of 450:1, but more often at the ratio of 300:1. In the farm account of Hermopolis, however, he seems to interpret bronze as billon, since it is obvious that the relation of silver to bronze in that document varied from 24:28 to 24:29. But since the only billon coin issued from the Alexandrian mint was a tetradrachm, he fails to explain the payments of billon coins in denominations of three, four, five obols or one, two, and three drachmae.

The most serious objection to Mommsen's theory lies in the fact that taxes in silver were reckoned almost invariably, not in terms of a seven-obol drachma, but in terms of a six-obol drachma, while private accounts were generally kept in terms of a seven-obol drachma. This is clearly revealed in the calculation of various supplements, garden taxes

(whether kept in the silver or in the copper standard), receipts, and summaries. Had the denarius been required in the payment of all taxes of twenty-eight obols or more, this fact would inevitably have been reflected in the accounting.¹⁹

Mommsen took it for granted that imperial denarii circulated freely in Egypt, while admitting that the imperial bronze issues did not do so. Had he set forth this thesis half a century later, his premise would not have been so readily accepted as self-evident and needing no proof. The evidence from hoards indicates that all imperial bronze and silver issues either did not circulate as currency or were barred from circulation. It is well known that Augustus and his successors wished to keep Egypt as a place apart (*Aegyptus seposita*), and perhaps the segregation of the currencies was part of this plan. Moreover, it would be surprising if the practical Roman used the Alexandrian mint to issue fiduciary currency for local use, and at the same time provided perfectly good silver denarii to circulate at approximate parity with the billon tetradrachm in defiance of sound economic principles. The Ptolemies had succeeded in using billon for local use, and Augustus apparently found that bronze issues worked satisfactorily. But Tiberius evidently thought it good policy to bring back billon in the form of a tetradrachm.²⁰ So far as available evidence goes, this solved the monetary problem of the Egyptians for more than two centuries.

It remains to discuss the problem of the circulation of the imperial aureus in Egypt. No gold was issued from the Alexandrian mint, and when we find

mention of the aureus in the documents, it may safely be assumed that the imperial issues are meant. In the reign of Claudius a marriage settlement was made in terms of gold, which was evidently paid in silver at some recognized rate of exchange. Another dowry mentions, in addition to jewelry, two gold denarii, which evidently was a local way of describing the aureus.²¹ Gold is not infrequent in dowries and, except for the two cases just cited, it was usually part of the bridal jewelry and was reckoned by weight. That gold was plentiful is clear from the goldsmiths' guilds, and from the fact that Clement excoriated the wealthy residents of Alexandria for their indulgence in gold plate and other luxuries.²²

Although gold was issued by all Roman emperors, there is very little evidence about the volume of issue or the velocity of circulation. Almost all our evidence of the aurei is derived from hoards, and, unfortunately, many of these never come to the attention of the scholar. But gold was never common enough to become the medium of accounting in the early empire, and literary references to it are slight. The inscriptions from Kerdassi in Upper Egypt (232-248) furnish our chief source of documentary evidence for the circulation of aurei.²³ The amounts spent by priests in performing the liturgies of their office are sometimes recorded in aurei, sometimes in Egyptian drachmae, and once there is apparently an equation of the two currencies. These inscriptions prove definitely that the imperial aurei were either in circulation at that place or were sufficiently familiar to be used as accounting terms. Kerdassi was a station for the Ethiopian trade, and gold may have

been brought there for this purpose, just as gold and silver passed through Coptos for the trade with India.²⁴

With free markets for gold at Alexandria, Coptos (for the Indian trade), and Upper Egypt (for trade with central Africa), it made little difference whether the gold on sale was coined or not. Under these conditions it would seem impossible to prevent the aureus from free circulation in Egypt. But if gold was bought and sold and its price fluctuated with the law of supply and demand, the aureus became a commodity, and a fixed relation between it and the local fiduciary currency could not be maintained within the country, even though exchange at the ports of entry could be rigidly controlled. It was to the advantage of Rome in the payment of the annual tribute that some such control should be maintained.

Gold hoards are somewhat commoner in Egypt than those of silver. Six have been reported since 1900. Three of these were buried in the reign of Commodus or later, two in the third century, and one in the fourth. One of these reported from Caranis may have come from the military barracks. While one may infer from the hoards of debased silver that it was hoarded only when such coinage was acceptable to the owner, it is less certain about hoards of Roman aurei. They might have been buried as a valuable and imperishable commodity, but they might not necessarily have been in circulation as part of the currency system in the country where they were hoarded.²⁵

There seems little question that there was considerable gold in Egypt, that it was hoarded in some

quantity toward the end of the second century, that it was familiar enough at Kerdassi to be used in accounting. There is also frequent mention, especially in dowries, of gold by weight (τέταρτον). In view of the debased imperial silver currencies of the late second and third centuries and the prevalent use of billon in Egypt, it may be questioned whether the aureus was established as a current coin in fixed relation to the billon, or whether it was treasured as a commodity, whose value was determined by the law of supply and demand. The most reasonable view is that gold was traded by weight in the third century. The lack of any accurate standard in the weights of known aurei of this period precludes any other explanation of the gold issues.

The assumption of Mommsen that the imperial denarius circulated freely in Egypt must be rejected. It is supported only by the fact that the denarius circulated everywhere else, but Egypt, unlike other provinces, was a special enclave within the Empire, had its own mint, and its own local currency. The *arcana imperii* were probably many. Only one is known to us, that senators were forbidden to enter Egypt without imperial permission. This was evidently designed to prevent any pretender to the throne from securing a base in Egypt and controlling the grain supply of Rome. Possibly the maintenance of a fiduciary currency in the country was another of the secrets. Neither the hoards nor any document from Egypt supports the theory of the free circulation of imperial silver or bronze in the cities or in the country districts. Moreover, economic laws and experience show that neither gold nor silver money can

circulate on an equality with fiduciary equivalents for any length of time. Gold was acceptable in all parts of the world as a medium of exchange. Egypt was no exception, and although aurei found their way into the country, it was impossible for them to circulate at a fixed value in relation to fiduciary currency.

We may summarize briefly certain definite facts about Egyptian coinage of the early Empire. Augustus issued bronze coins of different sizes and weights from the Alexandrian mint. These bear no indication of values, but evidently one of the denominations was called the drachma. Since the obol and the half obol appear in private accounts, it is probable that the latter at least was current, but the chalcous is limited to tax accounting and may be a fiction inherited from Ptolemaic times. Augustus too permitted some of the late Ptolemaic issues to remain in circulation. Since he seized all the silver and gold, it is evident that the Ptolemaic issues left in circulation were the billon coins, and that these were called Ptolemaic silver. Apparently Augustus also established a rate of exchange for traders whereby the Roman denarius was equated with four Egyptian drachmae (billon or bronze). About the year 20 Tiberius issued a billon tetradrachm which soon came to be known as Augustan silver. This term first appears in 36, and could not have been applied to the bronze issues of Augustus.²⁶ The billon and the bronze issues continued with some modifications until the reform of Diocletian.²⁷

The billon and bronze issues of the Alexandrian mint were fiduciary. Mommsen held that the billon

was called bronze, and assumed that the only denomination of billon was the tetradrachm, but he left thousands of payments in units under the tetradrachm unexplained. Moreover, in regarding Ptolemaic silver as the name applied to Ptolemaic tetradrachms of good silver, he was forced to the curious assumption that Augustus withdrew the billon and left good silver in circulation.

By rejecting Mommsen's theory of the circulation of the imperial denarius and by interpreting Egyptian documents on the basis of the issues of the Alexandrian mint, it is most natural to conclude that the bronze coins were called bronze, and that the Ptolemaic and Augustan billon issues were called silver by a polite fiction. Furthermore, accounting in the tax bureaus had been in terms of a silver drachma of six obols from the very beginning of Ptolemaic rule. These same bureaus continued to function with little change of personnel under Augustus, and the same accounting practice was continued with true bureaucratic conservatism. When Tiberius introduced the billon tetradrachm it soon went to a premium over the bronze in private circulation. This premium appears almost exclusively, however, in private accounts of the period. In the calculation of taxes it was ignored, and the bureaus went on reckoning the tax down to the last farthing, as they had always done. When they gave a receipt, the receipt corresponded, of course, to the entry in the tax register. The Caranis registers published by the University of Michigan indicate clearly how minutely the taxes were calculated, but the marginal

entries opposite each name show that the actual payments were made in tetradrachms and obol-units of the tetradrachm which varied in value from twenty-eight to twenty-nine obols. It seems safe to assume that Augustan silver, the silver drachma, silver obol, dichalcon, and chalcous are all fictions of accounting. When the silver drachma appears in private accounts it is equivalent to seven obols in bronze. In the third century the billon tetradrachm was stabilized at twenty-eight obols, and thereafter the silver drachma regularly had the value of seven obols.

We have already suggested that Augustus equated the Roman denarius with four Egyptian drachmae, but definite proof is lacking. When Tiberius issued the billon tetradrachm, it contained in its alloy the same amount of silver as the Roman denarius. It is therefore assumed with some reasonableness that the billon coin was equated with the silver denarius. The first concrete evidence comes from the tax on Jews levied by Vespasian. In the rest of the Empire this was two denarii; the Egyptian Jew paid eight drachmae with a small supplementary charge of two obols.²⁸ In military accounts, which were kept in terms of the denarius, the Egyptian tetradrachm of twenty-eight obols was used as an equivalent coin. The same equation was made in papyri of the late second and early third centuries.²⁹ In accounting practice of the fourth century the tetradrachm and denarius were interchangeable terms, although both coins had long ceased to be minted. Since the imperial aureus seems to have had the exchange value

of twenty-five denarii until the age of Septimius Severus, its value in Egyptian currency until that time must have been 100 drachmae.

The geography of Egypt and the self-sufficiency of the country made her peculiarly adapted for the effective operation of a fiduciary currency. Deserts lay on the east and the west, and the only approach from the western Mediterranean was by sea. Caravans from the East entered at Pelusium; the trade with India by way of the Red Sea passed through Myos Hormos and Coptos. Thus there were few ports of entry, and the control of exports and imports by a strongly centralized government was easy. Moreover, the Egyptian peasant fed and clothed himself from the produce of the country. Some iron for his primitive tools was imported, but his wants were simple and were supplied from within the country. The wealthier urban population imported some luxuries, but these were regulated. As a rule, the balance of trade ran in favor of Egypt, and this was especially true under the Ptolemies. In the Roman period, however, the tribute in money and in kind was a heavy drain on the country. In spite of this annual tax, there was a sufficient surplus of grain and of other commodities for sale in the open market, which furnished funds to pay the tribute, provided for imports, and enabled many of the inhabitants to acquire considerable wealth. Thus the only need for gold or silver was for payment of the Roman tribute, for use in the Indian trade and for settling unfavorable balances in Mediterranean trade—a condition which rarely arose, and probably only in years when the failure of the flood brought widespread disaster.

The fiduciary currency of Egypt was quite satisfactory for local use so long as the people had faith in the stability of the government, and so long as the state readily accepted this currency in the payment of all taxes. The cost of local administration and defense in Egypt is unknown, but it would seem that the annual taxes were sufficient to meet not only the tribute to Rome but also the cost of the army and the local bureaucracy. With a favorable balance of trade and a balanced budget, the fiduciary currency could easily be controlled, especially when there was no occasion to increase the volume of issue beyond the needs of local trade.

Although Augustus and his successors maintained a separate monetary system for Egypt, it was never their intention to isolate Egypt economically. The West needed Egyptian products—wheat, paper, linen, and a wide range of luxuries. Moreover, the emperors needed the revenue in money as well as in kind. This revenue could be provided only by giving Western traders free access to the Alexandrian market. Obviously the emperors could make no use of the fiduciary coinage of Egypt outside the country of issue, and it was imperative to secure imperial currency by the export of goods to the Western markets. It remains to discuss the relation of the Egyptian to the Roman currency, and the machinery provided for settling the annual payments of tribute.

A clause in the *gnomon* of the *idiologus* forbade the exchange of money for more than its worth. The *gnomon* was formulated by Augustus, and this clause was probably taken over from the code of the

Ptolemies. When they began to issue debased currency for local use in Egypt, they found it disastrous to permit the free circulation of good money at nominal parity with it. Everyone bought up the good money for private hoarding, and was willing to pay any price for it. This set off a chain of inflation in terms of the fiduciary currency which they could control only by forbidding exchange except as determined by law. It may be questioned whether the law regulating exchange was in itself effective. But if the foreign money was exchanged at the port of entry at banks where the government could regulate the exchange, the problem of currency control was vastly simplified. Thus a merchant wishing to trade in Egypt arrived at Alexandria, for example, either with commodities for sale or provided with money or bills of exchange. If he sold his wares at Alexandria, he received Egyptian billon which he could use for his purchases, or if he had a balance due him, this could be exchanged for foreign currency at the bank. When he came with bills of exchange or imperial currency, these were converted into local currency in the same way. In view of the rarity of imperial silver in the hoards, it would seem probable that it had to be exchanged on entry into the country, and was not legal tender within Egypt.

Some light on the procedure in purchasing exchange for the settlement of the annual tribute to Rome is provided in a letter written in 113 by an Alexandrian to his friend in the country.³⁰ The substance of the letter may be quoted here: "The prefect has returned from his official tour of the province and taken up his residence in the city. He has dis-

missed the procurator, but his successor has not yet arrived. The price of the gold [trading unit?] has fallen from fifteen to eleven drachmae. The officials appointed by lot in charge of revenues, and whose settlement term (?) has expired, have appealed to the prefect to stabilize the price. He promised to do so yesterday, but at the moment of writing has not yet taken action."

The letter was probably clear enough to the recipient who knew the situation, but after eighteen centuries the interpretation is more problematical. Evidently there had been some sort of panic on the Alexandrian Wall Street of that day and the price of gold had dropped so seriously that the intervention of the prefect was demanded. The dismissal of the imperial procurator was evidently significant, but we can only guess at the reason. This much we know definitely. The letter was written May 5, 113, shortly before the outbreak of the Parthian War, when Trajan probably was gathering stores to supply his expeditionary force. There was considerable grain in the free market of Egypt after the tribute had been paid. The procurator had been sent to purchase this, but apparently had failed to do his duty and had been dismissed. Possibly speculators, who had made profits in the Dacian war contracts, flocked to Egypt to "corner" the grain market there. They had ample supplies of gold, but in order to enter the Egyptian market, they had to purchase local currency. Thus we have the curious spectacle of gold dropping in terms of a fiduciary currency. Moreover, a drop of over 25 per cent is unusual. The unit of gold (*χρυσός*) is not stated. Probably the

trading unit is the Roman scruple (*scrupulus*), which would normally sell at about fifteen drachmae four obols (Egyptian standard). Another explanation, that the writer carelessly omitted the hundreds, holds that the imperial aureus was meant, and that this had dropped from 115 to 111 drachmae or less than 4 per cent. The equation, however, of the aureus with 115 Egyptian drachmae is unknown. If the aureus was worth twenty-five denarii, its normal value at the exchange banks of Alexandria should be 100 Egyptian drachmae, and it may be seriously questioned whether any writer would be in the habit of omitting hundreds in quoting prices.

Whatever its interpretation may be, the letter is important because it presents two facts. One is that there was a free market for gold at Alexandria, which it was in the power of the prefect to control; and the other is the first mention of officials chosen by lot in charge of revenues. Without further information we can only conjecture their duties. Presumably they were Alexandrian bankers selected annually to secure the exchange necessary to pay the tribute to Rome. Since this total would vary little from year to year, the liturgy was not burdensome, and on occasion it might even be profitable. The task was facilitated by the exchange banks at Alexandria, where foreign credits were accumulated and where the money collected in taxes may have been deposited. Probably the necessary bills of exchange and imperial currencies were forwarded along with the corn fleet, which usually set out from Alexandria early in May or about the time this letter was written. The reason for the appeal of the commissioners for a

stabilization of the exchange rates can only be conjectured. Apparently they had entered into contracts for gold at the usual rates, but the recent panic had unsettled the market. There is some reference to a term of settlement (*προθεσμία*) which had expired. If they were forced to settle at the contract price in the present market, their losses would be heavy.

This letter, if we interpret it correctly, is our sole evidence for the methods of settling the annual tribute to Rome. In this connection we might mention the existence of a *fiscus Alexandrinus* at Rome. This bureau probably issued bills of exchange for merchants going to Alexandria, thus avoiding the risk of transporting bullion by sea. Some bullion was transported, since it was required for the Eastern trade. How the annual balance of trade between Egypt and other parts of the Empire was settled is unknown. With a heavy export of luxuries and of staple products such as wheat, linen, glass, and paper, it is probable that the balance went in her favor. Presumably there was a considerable accumulation of gold, and this went into the hoards of wealthy farmers or industrialists. In the third century Egyptian cities spent lavishly on public works, games, and pensions. Since they had no other sources of revenue, this expenditure was made possible by the generosity of the wealthy members of the community. In the course of three hundred years it is not impossible that Egypt recovered much of the gold confiscated by Augustus, and this may have been the source from which Diocletian drew to reestablish the gold standard.

At the beginning of the third century the Roman denarius and the Egyptian tetradrachm were still equated, and this equation was retained in accounting long after both coins had ceased to be minted. The value of the antoninianus in terms of imperial or Egyptian currency is still a matter of guesswork, and no light is thrown on the problem by the papyri, unless one chooses to assume that the antoninianus was identified with the denarius. An equation of the imperial aureus in Egyptian drachmae seems to be established in two inscriptions from Kerdassi dated in the reign of Philip. In one of these the cost of a certain liturgy is given in drachmae. Three years later the same priest says that he spent twenty aurei on his first liturgy and thirty on the second. Presumably the twenty aurei were equated with the sum in drachmae, but unfortunately the reading of the latter amount is a matter of dispute. Wilcken read the numeral as 3,500; Kubitschek, who is followed by Heichelheim, as 6,500. Thus the aureus (twenty-five denarii or 100 Egyptian drachmae) would be worth either 175 or 375 Egyptian drachmae in 244-248. Even if the value at Kerdassi could be definitely established, it may be seriously doubted whether this value would reflect the official exchange rate at Alexandria.³¹ If it did, it would mean not only that Rome had ceased to exercise control over the exchange of Egyptian and imperial currencies, but also that the Egyptian tribute to Rome had dropped in terms of gold to a half or a quarter of its former value. Since there is no evidence that the money taxes in Egypt had been increased, it is hard

to believe that Rome had abandoned control of the exchange to take such a heavy loss.

For the latter half of the third century the relation of Egyptian to imperial currency is unknown. The Alexandrian mint continued to issue the billon tetradrachm in the same size and weight, though with steadily diminishing silver content. The usurpers, Macrianus and Quietus, issued coins of billon with slightly higher silver percentage, but apparently some of the Egyptian banks refused to accept their coinage.³² It is rather puzzling to find references of somewhat later date to drachmae of new silver coinage (*δραχμαὶ ἀργυρίου καινοῦ νομίσματος*), although no changes were made in the Alexandrian issues. The new silver first appears in 267, and in the same year Egyptian contracts call for payment in old Ptolemaic silver.³³ The only new currency of the period was the antoninianus. Does this mean that the imperial antoninianus, which was now on equal footing with Alexandrian billon so far as metallic value was concerned, was permitted to circulate in Egypt? If so, the antoninianus would seem to have been equated with the billon tetradrachm, and therefore with the denarius. But so far no antoniniani have turned up in Egyptian hoards. This, perhaps, is not decisive evidence, since the Egyptian may not have taken kindly to the new issue. References to the new coinage appear sporadically between 266 and 302, although after 279 it is customary to call it coinage of new Augustan silver. Except for the very limited issues of Vaballathus, either as coemperor with Aurelian or as an independent ruler, and the

coins of Domitius, there is nothing in either the billon or the bronze issues of the Alexandrian mint which justifies the use of this epithet.

The old Ptolemaic coinage had long since disappeared from circulation. Its reappearance in contracts after two centuries would imply that the contracting parties were seeking some medium of exchange which was more stable than the new coinage. Thus an endowment made at the close of the second century was phrased in terms of the Attic drachma, although Athens had ceased to coin silver under Augustus.³⁴ Neither Attic nor Ptolemaic coinage was available in the third century of the Roman Empire, but to the contemporary Greeks in Egypt these terms represented a standard. The Attic drachma was equated with the Roman denarius, although the silver content of the latter under Septimius dropped from 75 to 50 per cent. If the new coin under Gallienus was the imperial antoninianus, it is possible that the Alexandrian billon was for a time called Ptolemaic silver to distinguish between the two. So far as the available evidence goes, there was no essential difference in value between the antoninianus and the Alexandrian billon.

The fiduciary currency of Egypt was successfully managed by the Romans for the first three hundred years of their rule. It is true that prices of Egyptian commodities rose during this period, but, except for years of low floods, the rise was slow and steady. This bore no relation whatsoever to the silver content of the billon. Thus when Augustus was issuing only bronze coinage from the Alexandrian mint we find wheat ranging from two to four drachmae per

artaba.³⁵ When billon was introduced by Tiberius, no change in price levels can be detected. In 45 the price of wheat ranged from four to eight drachmae. The billon alloy remained unchanged from Tiberius to Marcus Aurelius, while the average price was eight drachmae, with a minimum of two drachmae under Nero and a maximum of twelve drachmae in the middle of the second century. Although the billon lost three fourths of its silver under Marcus Aurelius, the price of wheat in 162 was eight drachmae two obols (P. Ryl. 197) and in 183 was eight drachmae (BGU. 200); the rise to twenty drachmae in 191 was probably due to a poor flood. The next available prices come from the middle of the third century, when wheat sold for twelve and sixteen drachmae per artaba. The steady advance in Egyptian price levels is undoubtedly a reflection of Mediterranean or world prices. It is true that there is no evidence from outside Egypt to verify this statement, but the widespread wars of the third century, the invasion of barbarians, and the plagues, which usually follow famine, afford proof of a world suffering from soil exhaustion, lack of food, and consequent high prices.

The successful management of the fiduciary currency is inferred from the fact that there was no deep-seated inflation before the last quarter of the third century. We have no direct information on the methods of this control, but some deductions are permissible from the slight evidence available and from established economic laws. In the first place, it would seem that the provincial budget of Egypt was balanced throughout this period. The tribute

to Rome was undoubtedly the largest item in this budget; next came the cost of defense and of the local bureaucracy. The entire amount was easily covered by the annual taxes imposed on the people. Thus there was never any necessity of creating new money beyond the ordinary needs of the country. The local issues of the Alexandrian mint were readily accepted by the state in the payment of taxes, and in all local commercial transactions the billon and bronze circulated without question so long as the people had faith in the stability of the government.³⁶ Proof of the confidence of the people is shown by the abundant hoards of local currency which continued to be secreted even after serious inflation had set in. Moreover, the rarity of imperial currency in the hoards and the very few examples of Alexandrian issues outside Egypt lead to the conclusion that either the Ptolemies or the Romans had discovered for themselves the fact that debased currency cannot circulate at parity with coinage of good gold and silver. Since the ports of entry into Egypt were few, they learned to regulate the exchange at these points. Whether the export of local currency was forbidden by law, or whether it was unacceptable as currency to other provincials, is uncertain, but Alexandrian issues prior to Gallienus are exceedingly rare outside Egypt; those after Gallienus occur in finds of rather limited amounts, which have been reported from Britain or northern Europe.³⁷ If the Ptolemies initiated the control of exchanges, their task was facilitated by the fact that the balance of trade ran heavily in favor of Egypt. This was settled in gold or silver, which accumulated in the royal treasuries. Augustus trans-

ferred this treasure to Rome and restored it to circulation. In spite of the heavy annual tribute to Rome, the balance of trade still ran in favor of Egypt. It is probable that much of the gold found its way back to Egypt in the early Empire and ceased to exist as currency. This gold had no effect on the fiduciary coinage of the province, and the billon retained its value as a medium of exchange in local commercial transactions until 269 at least.

The serious inflation in Egyptian prices which began between 269 and 276 indicates that the state had lost its control over the fiduciary currency.³⁸ The causes of this inflation will be discussed later, but here we may observe that, so long as the Egyptian budget was balanced, the control of exchange strictly exercised, and the balance of trade favorable, there was no reason why the fiduciary currency of Egypt should not have continued to serve the needs of the country indefinitely without internal inflation. For the failure of the system it is necessary to consider certain factors outside Egypt.

Thus far we have limited our study of fiduciary currency to Egypt. It is well known that debasement of the imperial silver denarius began under Nero. An alloy of 10 per cent was not a very serious matter and probably greatly improved the wearing quality of the coin without seriously impairing the value of its metal content. The analyses of denarii issued from the imperial mints during the second century show that the percentage of silver varied from 90 to 70. This currency was evidently accepted throughout the Empire without question and without any noticeable increase in prices. With Septimius

Severus a perceptible debasement of the denarius began. Some of his issues contained three parts of silver to one of alloy, but others were approximately half and half. The latter is approximately the ratio preserved until the issue of the denarius was discontinued. The antoninianus of Gordian III had about 40 per cent of silver, and this continued until Valerian and Gallienus. Coins of Valerian show 50, 21, 16, and 14 per cent of silver. Under Gallienus the silver content dropped as low as 2 per cent, and thereafter seldom rose above 4 per cent.³⁹

The imperial bronze issues had always been fiduciary. The denarii after Nero had a silver content of considerable value, but with a tendency to become fiduciary. In the third century this tendency developed still further until the billon of Diocletian had a mere wash of silver. There is no concrete evidence that this debasement of the denarius had any effect on prices. The documents from Dura-Europos and a few scattered inscriptions indicate that the denarius was still a respectable coin and that there was no marked inflation before the middle of the third century. From 250 to Diocletian's Edict of Prices in 301 there is no available record of price changes, but indirect evidence points the way to inflation. Under Decius began the serious plague which seems to have depopulated whole areas. Inroads of barbarians in Asia and the Danube area caused wide devastation. Mauretania, Spain, Gaul, and Britain were lost to the Empire for a time. Under these conditions the imperial budget was thrown out of balance. The reserves in the treasury seem to have disappeared, or were unavailable for

ordinary use as currency.⁴⁰ Since the limit of confiscations seems to have been reached, or else had proved an unsatisfactory source of new revenue, there was no attempt to use them. Higher taxes to cover the deficit would have placed a heavy strain on the loyalty of the few remaining provinces, and there is no evidence that any emperor resorted to this expedient until Aurelian imposed new taxes in kind on Egypt. The policy of bonding the indebtedness of the state for later generations to pay was still unknown. The easiest way of meeting the budgetary deficit was the issue of fiduciary currency in greatly increased volume. It may safely be asserted that the silver content of the denarius or antoninianus made very little difference to the ordinary citizen who could not tell whether a coin had 2 or 4 per cent of silver, but when the flood of new money was put into circulation far beyond the limited needs of the community, then and then only did really serious inflation begin. For the Empire we have no direct evidence of inflation between 250 and Diocletian's edict in 301, but from the rapid rise between 269 and 276 in Egypt we may infer that Mediterranean prices had risen some time before 276. This rise in Mediterranean price levels could hardly fail to be reflected in Egypt, no matter how rigidly the exchange of money at Alexandria was regulated.

An increase in the volume of issue from Alexandrian and imperial mints in the third century is generally assumed, but it is largely an inference from the greater frequency of these coins in hoards. One must be careful in the interpretation of such evidence. Most hoards have been chance finds, and

when a single hoard contains sixty or seventy thousand coins, and others contain a few hundred, the evidence may be heavily weighted to give a distorted picture. Other factors may complicate the problem. For example, the coins of Nero were unusually popular in Egypt, and are found in considerable numbers down to Diocletian. On the other hand, Nero seems to have called in the billon coinage of his predecessors and reminted them, for very few appear in later hoards. The activity of a mint might vary. Thus there are few issues of Alexandrian billon under Caracalla, and if they were not issued in sufficient quantities for ordinary commercial use, there would probably be an unusual increase of volume in the succeeding principate to supply the deficiency. A comparison of the average annual issue of Nero with that of Hadrian as furnished by the number of their coins in hoards might lead to the conclusion that Nero issued six times as many as Hadrian.⁴¹ This might have been possible if Nero had called in all previous issues of billon and reminted them, but the apparent relative proportion of the two issues was not reflected by any significant change in price levels. In fact, under Nero the price of wheat was lower than at any other period in the first three centuries.

The following list is a compilation of the evidence from hoards of coins from certain emperors in the second and third centuries, and since the length of their reigns varied considerably, the average annual issue in round numbers is given.⁴² It must be clearly understood that this list cannot in any sense offer an accurate picture of the actual volume of issue for any emperor, and that the publication of fresh material

might change the picture completely; but since it happens to confirm the evidence from other sources, it should be given some consideration, especially if the evidence from Egyptian billon is reflected elsewhere.

	<i>Alexandrian billon</i>	<i>Antoniniani or denarii</i>
Antoninus Pius...	30	825
Marcus Aurelius..	13	1070
Septimius.....	1	1205
Caracalla.....	0	1825
Severus Alexander	115	920
Valerian.....	300	450
Gallienus.....	500	3620
Claudius	2125	12,760
Aurelian.....	200	2710
Probus.....	300	2250
Carus.....	660	660
Diocletian.....	340	335

The relative inactivity of the Alexandrian mint under Septimius Severus and Caracalla may explain the activity under Severus Alexander to provide coinage for commercial needs. The increase of imperial issues under Gallienus is easily understood as his method of balancing a budget suffering from the loss of revenues from Asia, Gaul, Spain, and other provinces, but the progressive inflation of the volume of Alexandrian issues under Valerian, Gallienus, and Claudius is more difficult to explain. In spite of the plague which ravaged Alexandria under Decius, Egypt seems to have entered upon a period of renewed prosperity. The municipal accounts of Hermopolis and Antinoopolis in the reign of Gallienus show that these cities were amply supplied with

funds.⁴³ There is no evidence that taxes increased. The budget was easily balanced, and there was no reason, so far as the internal economy of the province was concerned, for any increase in the issue of billon. Possibly in view of the various military campaigns in the East and elsewhere, there were heavy purchases of supplies over and above the tribute in kind. If so, the emperors may have provided local currency from the Alexandrian mint to pay for their purchases in Egypt, and this may have set off an inflationary movement much aggravated by the monetary policy of Claudius, who in his short reign of two years kept the mints working overtime. The return to more or less normal conditions under Aurelian and his successors is reflected in the fact that wheat prices in Egypt remained fairly steady between 276 and 294.

The fiduciary currency of Egypt served the local commercial needs of the country quite satisfactorily for three hundred years. This currency was kept separate from the imperial coinage, and did not circulate outside the bounds of the province. Imperial silver, it seems, and bronze were not allowed in Egypt, although there is some evidence that aurei were current in Upper Egypt during the third century. Apparently the gold coin was a commodity rather than an integral part of the Egyptian currency. Although the aureus was nominally equated with 100 Egyptian drachmae, and it was to the advantage of Rome to maintain this exchange rate for the settlement of the payments of Egyptian tribute, this equation might have been maintained at the exchange banks set up at ports of entry, but could not have been maintained within the country except by limit-

ing circulation of the aureus as money. The control of the fiduciary currency was facilitated by Egypt's favorable balance of trade, by a balanced budget, and by restricting the volume of issue to the ordinary needs of local trade. In the financial crisis of the Empire of the third century, when the loss of rich provinces made it impossible to balance the budget, the emperors did not have the courage to increase taxes in the provinces still remaining, but met the deficit by unrestricted issues of fiduciary currency. There was no need for this in Egypt, where the local budget was still balanced, but heavy purchases of supplies were necessary and, instead of unpopular forced levies, the emperors made the mistake of increasing the volume of issue from the Alexandrian mint to discharge their indebtedness.

The metallic content of a fiduciary currency had no significance in determining prices. In Egypt wheat prices were never so low as under Augustus, when bronze was the only currency issued from the Alexandrian mint. It makes little difference whether these prices were quoted in bronze or Ptolemaic billon, for both metals had about equal commercial value, and it is impossible that these prices were quoted in terms of silver denarii, which were unknown to the Egyptians. So long as the state freely accepted the fiduciary currency in the discharge of obligations, so long did it prove acceptable in all local commercial transactions. Outside the bounds of the state such currency was acceptable only as a commodity, and as such its value was very slight. For Rome this was not a serious problem, since the Mediterranean world was more or less self-contained and

only luxuries were imported from outside the boundaries. Most of these were paid for by exports, and the settlement of unfavorable balances of trade by gold or silver was the exception rather than the rule.⁴⁴ There seems to be no reason why fiduciary currency should not have continued indefinitely both in Rome and in Egypt. But when the state began to issue the token money in order to make up the annual deficit in tax payments, or, if the budget was balanced as in the Egyptian economy, to purchase supplies over and above the income of the provincial treasury, the whole economic structure was impaired. It may have taken some years before inflation began, but once begun, it became impossible to control.⁴⁵ The loss of provinces and the barbarian raids under Gallienus must have unbalanced the budget, and he may have been the first to resort to heavy issues of fiduciary currency to make up the deficit. The evidence from the hoards must be used with caution, but the relatively large number of billon coins from the second half of the third century supports the theory of an unusual volume of imperial issues in this period, and the general and great advance in price levels in the last quarter of the century can be explained only on this hypothesis.

II

INFLATION

THE study of inflation in the ancient world is handicapped by the limited nature and extent of the evidence. There were no financial journals and no price indices.¹ Literary sources seldom give any indication of prices, and inscriptional records are equally rare except for the copies of Diocletian's Edict of Prices. Within the last half century a vast number of records have come to light from Egypt, and any study of economic conditions in the Roman Empire must take cognizance of this new material. While the Egyptian papyri yield material of great importance, its interpretation is not always easy. For example, the price of wheat, which was the staple food of the Mediterranean world, varied with the season, accessibility to transportation facilities, the rise of the Nile, the world demand for food, and other factors. The artaba is the measure used for cereals, but there were a dozen different sizes for this measure. Where no particular measure is specified in sales, we assume that the standard was uniform. In taking the price of wheat as our criterion, it can readily be seen that it is far from being a perfect one, but at the present moment it is the best available.

Changes in price levels depend primarily on the volume of goods, the volume of money, and the velocity of circulation. In a staple commodity such as wheat the demand was reasonably uniform. In Egypt the tribute in wheat seems to be a fairly con-

stant quantity, though it was based in some way on the variation of the Nile flood. This factor, however, also determined the annual yield. Apparently one counterbalanced the other. When the yield was more abundant the tribute was higher, and when the yield decreased the tribute was lower. The requirements for seed and for local consumption, where the population was more or less static, varied little from year to year. It is probable that in normal years the amount of wheat available for the free market was fairly constant. The Nile deposited its sediment over the valley, and in spite of the fact that this deposit was not rich in organic matter, the inundation had the merit of distributing virgin soil over the irrigated area and enabled the peasant to grow wheat with less necessity to resort to rest crops than in other provinces.

The volume of money is a more difficult problem to determine, since there is no record of the activity of the Alexandrian mint. We have reason to believe that the fiduciary currency issued from this mint was limited.² For this our chief evidence is the fact that local price levels were maintained with some degree of stability during the first three centuries of Roman occupation. A secondary source of evidence lies in the published hoards of Egyptian coins; but this evidence must be used with caution. An analysis of hoards of the first two centuries shows that coins of Nero greatly predominated.³ This might imply that the issue of billon was greatly increased during his reign. It should be noted, however, that not only the Ptolemaic issues but also those of Nero's predecessors are wanting in later hoards, and that these earlier coins were apparently called in and reminted by Nero. Possibly the personal popularity of Nero

in Egypt was a factor in explaining the number of Neronian coins in hoards. In the late third century the coins of Gallienus, Claudius, and Probus appear in large numbers, and this may be a reflection of the inflationary movements of the period. It is our contention that foreign currency did not circulate in Egypt but was exchanged for Egyptian money at ports of entry.⁴ This exchange would have the tendency to put more money into circulation, or if the local currency was limited in supply, the rate of exchange would move in favor of Egypt.

The velocity of circulation in rural Egypt was undoubtedly low. The peasant lived on a bare subsistence level, and his needs for food and clothing were supplied from the farm.⁵ Whatever he realized from the sale of surplus produce or from casual labor was hoarded against the coming of the ubiquitous tax collector. Some of his tax may have been spent for the local bureaucracy, but most of it went to Alexandria or to Rome, whence it returned at the next harvest for the purchase of commodities. In the urban communities the wealthier classes spent more lavishly for luxury products, but the urban proletariat evidently lived on the same humble scale as their rural counterpart. After their need for food and clothing was satisfied, the remainder of their earnings was hoarded for the tax collector.

Two kinds of inflation may be distinguished. A slow but steady rise in price levels is usually called "creeping inflation." Sometimes, as after the recent World Wars, the inflation got out of hand and prices advanced by leaps and bounds. This may be described as "leaping inflation."

For the Roman period in Egypt our chief evi-

dence for inflation is the rise in wheat prices.⁶ During the reign of Augustus the average was three drachmae per artaba, with two and one-half drachmae the minimum and four the maximum. During the first century there were wide variations, probably due to local flood conditions or to world famine. Under Claudius wheat sold for eight drachmae, and this may reflect the world famine prophesied by Agabus (Acts xi. 28), which came to pass in his reign. Under Nero two drachmae one obol were paid for an artaba. The great number of Neronian coins in Egyptian hoards has led to the suggestion that this emperor increased the volume of issue; if there was an overissue, prices should have risen. Fifteen years later the accounts of an estate at Hermopolis show that wheat sold for ten drachmae, but in this case there are indications that a poor flood was the cause of scarcity. The average for the first century (seven years recorded) was six drachmae.⁷ In the second century the average rose to ten drachmae with a minimum of six and a maximum of twenty drachmae. In the third century records are lacking for the first half; but four documents from the reigns of Valerian and Claudius show an average of sixteen drachmae per artaba. In the course of three hundred years, accordingly, wheat advanced from an average of three to sixteen drachmae per artaba.⁸ In general, the advance in price was more or less orderly, although in some years special conditions sometimes led to a sharp rise above the average.

This creeping inflation in Egyptian prices does not seem to have been due to local conditions. So

far as known, the population of Egypt showed no increase between Augustus and the Arab conquest, and the local demand for wheat may be assumed to have been more or less constant. Owing to the bounty of the Nile the fertility of the soil was not impaired by constant cultivation. There is no evidence that taxes in kind were increased, and under these conditions the supply of wheat for the open market did not vary greatly from year to year. Here, however, we must seek the cause of inflation. If the local demand did not increase materially, was there any increase in export requirements? Unfortunately records of prices from other parts of the Empire are rare, and when recorded usually reflect extraordinary circumstances. There is, however, no doubt that the ancient farmer had little knowledge of artificial fertilizers, that scientific agriculture was still in its infancy, and that the productivity of arable land declined through overcropping. Under these conditions the supply of wheat in the Mediterranean world steadily declined and as a consequence world prices steadily advanced. This advance had its reflection in the open markets of Egypt. Increasing demand led to higher prices. This we believe to be the true explanation of the inflation in Egyptian prices outlined above. Billon currency or the silver content of that currency was not a factor of any importance in this inflation. Prices in Egypt were never so low as when the country was on a bronze standard under Augustus. After Tiberius introduced billon, prices rose steadily, although the silver content long remained unchanged. Marcus Aurelius reduced the silver alloy of the billon by three fourths,

but prices remained steady. Since we can discover no reason for the advance in Egyptian price levels in local conditions or in the monetary system, whether of the imperial or of the Alexandrian mints, we must ascribe the inflation to increasing demands from other parts of the Empire and to the consequent rise in world price levels.

In the last quarter of the third century this creeping inflation gave way to leaping inflation. Under Claudius wheat rose to twenty-four drachmae per artaba, or double that recorded thirteen years earlier. This advance might have been caused by famine conditions as the result of a poor flood, but in 276 wheat sold for 200 drachmae, a twenty-fold increase in twenty years.⁹ It may be suggested that the long period of slow or creeping inflation had suddenly culminated in leaping inflation under Aurelian, and this was foreshadowed under Claudius. The sudden advance seems to have been brought under control to the extent that this level for wheat prices remained reasonably steady for the next twenty years. In 294 wheat sold for 232 drachmae, and the official rate of commutation of military supplies in a contemporary document was 300 drachmae.¹⁰ This rise in wheat was paralleled by similar advances in other commercial transactions. In 259 the lockers in a bathing establishment rented for seventeen drachmae one obol. Twenty years later the same lockers rented for 535 drachmae. The price of a donkey in 217 was 400 drachmae. In 287 the cost was 3,800 drachmae.¹¹

This evidence makes it possible to localize a sudden burst of inflation between 269 and 276 with some

preliminary indication of the coming crisis in 269. It remains to consider the causes. Since Egypt had its own currency and its own budget, it is necessary first of all to examine internal conditions, but since Egyptian commodities had a wide market in the Mediterranean world, it is equally necessary to consider the evidence from other places.

In the third century Egypt was little disturbed by the revolutions which raged in other parts of the empire. When Valerian was captured by the Persians, Macrianus and Quietus were acknowledged at Alexandria (260-261) because they were in command of the Eastern armies rather than from any desire to break with Rome, and when these claimants fell in Thrace, there was no hesitation in accepting Gallienus as the lawful emperor. The occupation of Alexandria by the Palmyrene forces does not appear to have affected the relations of Zenobia to Rome until the actual revolt of Palmyra and Vaballathus' brief assumption of the sole rule (270-271). His reign was brief, and the usurpation of imperial power by Firmus was quickly suppressed (272).¹² There was no change in currency standards during this period, and even if grain was not forwarded to Rome, the collection of taxes in money and kind apparently went on without change. The usurpers probably sold the wheat destined for Rome and used the funds to pay their troops. There was no particular reason for the sudden advance in prices in these short-lived usurpations unless they tended to destroy the confidence of the Egyptian people in the fiduciary currency. The continued hoarding of the billon militates against that possibility, but the hoards seem

to indicate that the Alexandrian mint was issuing billon in far greater volume than was required for normal business needs.¹³ It has already been suggested that extensive purchases might have been made in Egypt to supply the needs of the armies in the Persian campaigns, and that these purchases were financed by increasing the volume of fiduciary currency rather than by increased taxation.¹⁴ This may have been a factor in the Egyptian inflation which culminated in a sudden loss of confidence due to the Palmyrene invasion and the assumption of sole power by Vaballathus.

In tracing the history of inflation in the imperial currency there are, unfortunately, few records of prices outside Egypt to guide the investigator. Here one must depend largely on conjecture based on the evidence of the imperial issues and on the economic conditions of the period.

The study of the imperial issues from Nero to Diocletian shows that a high standard of purity in gold coinage was maintained by all emperors.¹⁵ From Nero to Macrinus the standard weight of the aureus (forty-five to the pound) was, with some sporadic exceptions, well maintained. After 217 the weight of the aureus fluctuated to such an extent that it could not have stood in any fixed relation to the subsidiary currency. When the value of the aureus was determined by weight, it ceased to be a coin and became a commodity whose value was determined by the law of supply and demand. In their desire to secure gold, people may have bid up the price in terms of subsidiary currency. This may have been a cause of inflation, but it would be mini-

mized if the government still accepted the fiduciary currency in the satisfaction of taxes, or if the government regulated the exchange of gold and denarii at fixed prices per unit of weight of gold (carat, scruple, or ounce, etc.). There is no evidence that the government paid its obligations in billon while demanding gold from the taxpayer.¹⁶

Analyses of denarii issued after Nero's reform show that the silver content fluctuated slightly with a tendency to decline. It was probably in the latter part of the reign of Marcus Aurelius that the silver content was reduced to 75 per cent, and this standard was maintained until Septimius Severus. The latter issued a denarius with the alloy increased to 50 per cent, and this continued to be the proportion of silver and alloy until the issue was discontinued under Gordian. There is no evidence that this change in the silver content of the coin affected prices in any way. The price of a quantity of bread at Ephesus *ca.* 100 is given as two obols. About a century later the same quantity sold for four obols.¹⁷ In neither case is anything known of the quality of the bread or whether local conditions, such as seasonal scarcity, war, or other factors, entered into the picture, and it would be dangerous to use these isolated facts to prove that price levels had doubled in this interval. It is clear, however, that the denarius was a coin of real value so long as it was issued. The prices recorded at Dura-Europos (235 to 240) show this beyond question, even though no comparison with other parts of the Empire is possible.¹⁸ From the reign of Decius inscriptions record sportulae of one and two denarii at Syros, of three denarii at Ostia (for

senators), and a similar distribution at Minturnae.¹⁹ These would hardly be worth recording if the denarius had depreciated, as is usually assumed.

The coinage of the antoninianus, first minted by Caracalla and temporarily suspended under Elagabalus and Severus Alexander, was resumed under Pupienus and Balbinus. The denarius was no longer minted after Gordian, but continued to be used as an accounting term. The new coin was about one and one-half times heavier than the denarius, but the percentage of silver was slightly less. When the antoninianus was revived, the silver content steadily declined until, under Gallienus, the analysis of some coins shows 2 per cent of silver in the alloy.²⁰ The hoards would indicate that the denarius was withdrawn from circulation under Decius; very few examples are found thereafter.²¹ The antoninianus continued to be issued from the imperial mints until the monetary reforms of Diocletian. Aurelian added the mark XX.I (or K A in the Eastern mints), but no satisfactory or convincing explanation of these numerals has yet been offered. In fact, the antoninianus remains a sort of numismatic mystery. No one knows its relation to other imperial issues, or why Caracalla saw fit to issue another fiduciary coin side by side with the denarius, or why Aurelian and his successors placed these numerals on the coins.

If we exclude the evidence from Egypt, there is no reason to believe that the minting of the antoninianus began a wave of inflation in the Empire. The hoards show that large numbers of the imperial issues from Gordian III to Diocletian were in circulation, and that the common people evidently had

confidence in their value. Whether the large numbers of these issues found in hoards is an accident of chance, or whether such finds afford proof that the imperial mints issued this fiduciary currency far beyond the normal needs is a difficult problem. In a period when plagues were rife and when invasion by barbarians and confiscation by the imperial agents were commonplaces, hoarding must have increased, and hiding places were either unrevealed or forgotten. In the absence of prices in this period the evidence for inflation must remain an inference from general economic conditions, but in the last analysis it is inference pure and simple.

Although there are no available figures, it seems safe to assume that the imperial budget was balanced under Augustus. The revenues of the Empire probably improved in a long era of peace through the development of the provinces. Strabo indicates that, under the careful management of Augustus, Egypt produced far more revenue than under the Ptolemies.²² The period of ruthless exploitation of the republican days was ended. The census was regularly taken in the provinces, and their resources were well known. Nero seems to have been the first to appoint a budget commission, and presumably this became more or less permanent. In the economic development of the provinces the revenues were evidently sufficient to meet additional expenses without any increase of taxation. A temporary increase of the tax on inheritance and manumissions by Caracalla was rescinded by Macrinus. The effect of the universal grant of citizenship by Caracalla on the system of taxation is unknown. Cassius Dio sug-

gests that his purpose was merely to extend the inheritance tax to provincials, but this is obviously a prejudiced point of view.²³ The evidence from Egypt implies that the poll tax was exacted as before, although the evidence is slight.²⁴ The crown tax was regularized in some way at the beginning of the third century and was a profitable source of revenue, but the evidence for this exaction ceases with Severus Alexander, who is usually credited with the edict authorizing its remission.²⁵

The chief item in the imperial budget was the maintenance of the army. There is abundant literary evidence for the soldier's stipend in the early Empire up to the reign of Domitian, when it was fixed at 300 denarii. The argument for increases under Commodus (375 denarii), Septimius Severus (500 denarii), and Caracalla (750 denarii), based on the amount of imperial donatives, is far from convincing.²⁶ Van Berchem, in his study of the military annona, suggests that its cost was transferred from the soldier to the taxpayer under Septimius Severus.²⁷ While it is undoubtedly true that the state must provide for armies on the march, where supplies might often be unobtainable, there is no clear evidence that the military annona was levied as a tax on the provincials before the time of Diocletian.²⁸

The cost of the imperial bureaucracy cannot be estimated. Higher officials received salaries, and equites sometimes recorded their rank as *trecenarii*, *ducenarii*, *centenarii*, or *sexagenarii*.²⁹ The clerks or minor officials were often slaves or freedmen who received a subsistence allowance. With the multiplication of procurators, curators, praefecti, and other

officers, the cost of government undoubtedly increased, but the burden was evidently less in the early Empire than under Diocletian, when bureaucracy had its greatest development.

Fertile ground for the development of inflation may be found in the Roman Empire of the third century. In the East the old Persian Empire revived under the Sassanid dynasty and threatened Rome as never before. Under Gallienus the barbarians crossed the Black Sea to pillage the coastal cities of Asia Minor. The defences of the Balkans were pierced, and the Goths raided as far south as Sparta. Dacia was abandoned (either by Gallienus or by Aurelian), and the Danube once again served as the boundary. Farther west the invaders raided Italy, Gaul, and Spain. Under Decius the Empire was swept by a plague which is said to have lasted fifteen years. Under Gallienus, Gaul, Britain, and Spain were lost to the Empire. Under Macrianus, and later under Vaballathus and Firmus, the revenues from Egypt were temporarily cut off. Under these circumstances the budget was probably hopelessly out of balance. What reserves there may have been in the treasury it is impossible to say, but it is not unlikely that the state took the easy way of issuing fiduciary currency in greater volume in order to make up the deficit. If this was the case, we may infer from the hoards that prices rose because of excessive supplies of currency rather than from any lack of confidence in the stability of the imperial power.³⁰

The question should now be considered whether inflation in the imperial currency would automatically cause the same thing in Egypt. This province had

its own currency and its own budget. Although tribute was paid to Rome, and there was evidently an official ratio maintained between the Roman denarius and the Egyptian tetradrachm, Egypt was a self-contained unit selling more to the Empire than she bought. So long as the exchange rate between the two currencies was effectively controlled, there was no reason why inflation in the imperial currency should be reflected in Egypt.

The isolation of the imperial and Alexandrian issues has already been discussed and the reasons given for believing that the denarius did not circulate in Egypt.³¹ Whether the antoninianus was designed by Caracalla to circulate over the whole Empire and was intended to replace the billon tetradrachm of the Alexandrian mint (which seems to have been closed for most of his reign) is unknown. It has already been suggested that the "new coinage" of 266 may have been the antoninianus, in spite of the complete absence of this coin in Egyptian hoards. If so, it is possible that the isolation of imperial and Egyptian currencies was abandoned after the antoninianus was revived by Pupienus, and that the latter became legal tender in Egypt.

The tenfold inflation in wheat prices which occurred between the reign of Claudius and Aurelian (269-276) may be regarded either as a local or as an imperial phenomenon. If the Alexandrian mint resorted to an overissue of fiduciary currency for some reason, inflation would inevitably follow. From our limited knowledge of events in Egypt during this period, there is no reason to believe that there was any necessity to resort to such measures. The other

alternative is that inflation began in the imperial currency as a result of economic difficulties in the reigns of Valerian and Gallienus. The budget was balanced by excessive issues of new money from the imperial mints. At the same time the recurring plague and the barbarian invasions caused a further drop in food production. As a consequence the price of wheat advanced by leaps and bounds, and this rise in Mediterranean levels was reflected promptly in the Egyptian market.

Aurelian restored the unity of the Empire, and with revenues once more on a normal basis there was no reason why the budget should not be balanced, although, in view of higher prices, the taxes in money would have to be advanced, unless there was a return to old levels. The evidence from Egypt shows that wheat remained at the higher price level for the next twenty years,³² and that there was a considerable increase in the tax on trades. Probably other taxes in money were also increased to correspond. In this way the inflationary movement was checked, but prices never returned to the old level. Aurelian is also said to have imposed new taxes in kind on glass, linen, papyrus, and hemp. It is doubtful if these would have had any effect in checking inflation. Zosimus records a curious tradition that Aurelian, on his return from the East, distributed new silver to the people, arranging that they should sell the counterfeit money in circulation and that in this way he preserved contractual obligations from confusion.³³ This statement cannot be supported by any numismatic evidence.

Diocletian returned to a more stable monetary

system in gold and silver. In 286 he issued a gold coin (aureus) of uniform weight (sixty to the pound) which was retained until Constantine reduced the weight to four grams (seventy-two to the pound). This lighter gold piece was called the solidus and remained in use for centuries. In 296 Diocletian also introduced a silver coin (argenteus), based on the denarius of Nero. Constantine replaced this by the siliqua, which was soon alloyed with base metal and then discontinued. The reason for the abandonment of silver in the coinage is unknown.

Diocletian discontinued the issue of billon tetradrachms at the Alexandrian mint in 297. Thereafter Egypt used the imperial system, and the mint at Alexandria issued only coins on the imperial standard. The bronze coinage (denarius communis) of Diocletian was fiduciary, and this was the weakest element in the new system. During the fourth century the chief coin used in Egyptian accounting was the "silver" denarius, which was still officially equated with the tetradrachm. This so-called silver coin was undoubtedly one of the new bronze issues, probably similar in size and weight to the familiar billon coin, but was silver only by courtesy. This was probably the same coin used in Diocletian's Edict of Prices to indicate the values of the commodities there listed.³⁴

As we have already indicated, prices in Egypt remained reasonably steady at the new levels from 276 to 294, and we may confidently assume that the same steadiness prevailed in the rest of the Empire. It is therefore surprising that, in spite of Diocletian's reform of the coinage, his Edict of Prices in 301 indi-

cates that a new spiral of inflation had begun. The price of wheat was set at 100 denarii per modius castrensis. If the denarius of the edict is, as seems probable, the denarius of contemporary Egyptian records, the price of an artaba of wheat in Egypt was $1,333\frac{1}{3}$ drachmae, or approximately six times the price quoted in 294.

The preamble of this edict blamed unscrupulous dealers as the cause of the current inflation. Prices were advancing "not only from day to day but from hour to hour and even from minute to minute, and this unbridled license was held in check neither by abundance nor by seasons of plenty." Obviously this advance in prices was not due to any lack of commodities, since the edict states that it continued even in seasons of plenty. The death penalty was imposed upon buyer or seller who exceeded the prices established in the edict. Lactantius, writing in 314, states that the high prices were brought on by the different acts of injustice and that the edict failed of its purpose. The scarcity of commodities grew much worse, and the law was finally repealed from mere necessity.³⁵

This new spiral of inflation may be placed somewhere between 294 and 301, and perhaps it began not long before the Edict of Prices was issued. This period was crowded with important reforms. Diocletian seems to have returned to a sound gold coinage early in his reign. After the suppression of the revolt in Egypt, he included Egypt within the imperial monetary system, and henceforth Alexandria issued coins on the imperial standard. In 297 the indiction cycle began, and this year probably marks the in-

stitution of the new system of taxation, which may also be contemporary with his administrative and military reorganization. The imperial power was never more secure, and inflation obviously cannot be ascribed to any lack of confidence in the stability of the régime. According to the preamble of the edict, Diocletian blamed the merchants whose avarice, even in seasons of plenty, led them to increase prices. But in his attempt to establish uniform prices in every part of the Empire the emperor and his advisors showed their ignorance of fundamental economic principles, and in blaming the merchants for the rise of prices it is clear that they did not understand the real cause. Can these be determined with the information at our disposal?

It is generally agreed that the silver and gold issues of Diocletian were of high standard in purity and of constant weight. The ratio established for the two metals is unknown, but it seems to have varied later in the fourth century between 14.4:1 and 18:1.³⁶ The former ratio was adopted by Justinian. It is probable that the bronze coin was fiduciary, as it had been for centuries, but whether it was convertible into gold or silver without limitation is unknown.³⁷ In Egypt taxes were assessed and paid in denarii for the greater part of the fourth century.³⁸ These sums were doubtless converted into gold or their equivalent before being forwarded to Constantinople. Possibly this gold was purchased by the government. In the fourth century imperial agents (*ἐπιμεληταὶ χρυσίου*) collected gold or silver in Egypt, but whether this was by purchase or by tax assessment is unknown.³⁹

Diocletian set the value of a pound of gold at 10,000 denarii (as read by Mr. Mattingly).⁴⁰ This would give the aureus of Diocletian an apparent value of $166\frac{2}{3}$ denarii. Since the denarius had been discontinued a half century previous to the edict, it is generally assumed that this name was given to a bronze coin (*denarius communis*) now issued from all imperial mints. If this was fiduciary, as it seems to have been, the bronze or metal content of the coins made no difference provided the government limited the volume of issue and accepted them at fixed values in terms of gold or silver. But as a matter of fact there is little evidence that gold was ever freely exchanged for silver or for bronze at fixed rates. Cassius Dio is the sole authority for the value of the aureus of Augustus, which he stated to be worth twenty-five denarii (100 sesterces or 100 Egyptian drachmae). Whether Diocletian gave a fixed value for his bronze in terms of gold or silver cannot be determined, although one might assume from the edict that this was the case. The evidence from Egypt, however, subsequent to the edict makes it clear that in this province at least the gold solidus fluctuated widely in terms of the Egyptian denarius. Whether this is true for the Empire generally is unknown, though it is quite certain that, if the bronze fiduciary coins were unrestricted in volume of issue, their purchasing power would decline. The first recorded legislation regulating the exchange of the gold solidus and the bronze coinage was a constitution of Valentinian III in 445 (Nov. XVI), whereby the purchase price of the solidus was set at 7,000 nummi and the selling price at 7,200.

The inflation in Egypt during the fourth century may be directly traced to government action, in part at least. It would appear that Egypt had profited greatly during the revolutionary period by the sale of grain and other commodities at high prices while the rest of the Mediterranean world suffered from plague, famines, and the ravages of war. Much of the gold of Europe seems to have flowed to Alexandria and to have gone into hoards. Some of this was regained by Diocletian in war but by no means all. In a document which Segrè dates, with great probability, in 304, the wealthy citizens of Oxyrhynchus were ordered to provide thirty-eight pounds of gold. For this the government offered 100,000 units (evidently denarii) per pound, or ten times the price established three years earlier.⁴¹

Thus the inflation of prices in terms of bronze coinage in Diocletian's edict may have been due in part to his anxiety to secure gold from the provincials. An expensive building program may have been partly responsible for the demand for gold. Another possibility must not be overlooked. We cannot date his administrative and military reforms with any precision, but the subdivision of Egypt into smaller provinces seems to have been carried out at the same time as his tax reform. It is perhaps significant that his edict calling for a census of the resources and tax units of Egypt in 297 also specified the amount of tax each *aroura* and each *caput* was to pay.⁴² That is, the tax rate was apparently established before he had any clear idea of the amount of revenue to be derived therefrom, and probably before he had any idea of the cost of his army and

bureaucracy in the new plan. We also know that the capitation tax on the urban proletariat was abolished in the Eastern diocese, and the result must have been a loss in revenue. The chances are that his first indiction of 297 led to an unbalanced budget, which could not be corrected until the first five-year cycle had ended. It is, therefore, not impossible that he resorted to the issue of fiduciary bronze coins in vast quantities, as Gallienus had done, and that this was a powerful contributory cause to the rise in prices, which he sought to control by the edict.

Thus it is necessary to consider different factors in the inflation under Diocletian. If there was an unbalanced budget and unlimited or unusual issues of fiduciary currency to make up the balance, we have one factor. Secondly, although Diocletian seems to have issued gold in abundance, his supply was not unlimited, and he may have sought to bring it out of hoards by bidding up its price, as was done later at Oxyrhynchus. Finally, the question whether his gold and bronze currencies were interchangeable at fixed prices is unanswerable with the available evidence. In the latter part of the fourth century we know that it was not the case in Egypt, and may not have been true earlier.⁴³

The history of inflation in the fourth century is known almost entirely from Egyptian records and may have been limited to that province, even though a uniform system of currency was now employed universally throughout the Empire. We have already mentioned the fact that Diocletian in 304 offered tenfold the price of gold as it was established in the edict. Later prices of gold may be given as

follows: In 324 the price of a pound of gold was 1,240,000 drachmae (310,000 denarii). Other documents cannot be dated precisely, but the variations in the value of the solidus show that the price was a matter of barter; thus quotations in talents of 6,000 drachmae may be cited varying from eleven to over 30,000 talents. It is impossible to determine whether these variations represent successive advances, but it is probable that the gold solidus in terms of drachmae or denarii rose more or less steadily during the fourth century.⁴⁴ Similar inflationary tendencies may be observed in other prices quoted in terms of bronze.⁴⁵ Diocletian fixed the price of wheat at 100 denarii per modius. If we assume that the denarius and the Egyptian tetradrachm were still equated, an artaba of wheat was worth 1,333 $\frac{1}{3}$ drachmae. In 314 wheat sold for 10,000 drachmae. In the following year it was quoted at 3,000 drachmae. In a period of inflation such a recession is unusual, and no explanation of the drop in price is available. The inflationary process was immediately resumed, and twenty years later (334) an artaba of wheat sold for fourteen talents. The only other available price for the fourth century (dated sometime after 344) shows that wheat had risen to 334 talents per artaba (approximately 2,000,000 drachmae). It has been estimated that, if the smallest coin issued from the Alexandrian mint were taken as the tetradrachm or denarius, it would have required about sixteen tons of bronze to purchase fifty pounds of wheat.⁴⁶

These fantastic sums, which are not confined to sales of wheat but apply to other commodities, suggest that Egyptian inflation took on a different as-

pect during the fourth century. The ancient mint could not issue bronze in such quantities, nor could ordinary business be transacted with tons of small change. The only reasonable explanation is that the units of bronze were revalued from time to time and that the tetradrachm or denarius was given the value of ten drachmae (or denarii), a hundred, a thousand, a talent, a myriad, or a great myriad. Otherwise the value of the metal in the coins must have far exceeded the value of the coin, and the bronze would have been melted down for other uses. As prices rose in terms of denarii, the mint was unable to supply the coins in sufficient volume. When this expedient of revaluation began, there were no limits to which prices might go, but this inflation was more apparent than real.

A similar phenomenon had occurred under the Ptolemies.⁴⁷ When they began to depreciate the silver content of their drachma, the good silver presumably soon disappeared from circulation and went into hoards. The government wished to secure this silver, and so a premium was offered. The peasant could pay his taxes in bronze coins, but the bronze coin (*χαλκός*) was at a discount. Thus the tax on garden land in the Fayûm was taxed at the rate of 300 bronze drachmae or one drachma in silver. This method of accounting persisted down into Roman times, and different rates of bronze against silver were apparently devised for different taxes, or perhaps for different nomes.

So far as known, the Romans had not attempted revaluation upward. The coins of Aurelian and his successors show certain marks, but, as already noted,

on the interpretation of these there is no general agreement. An interesting letter written by a government official in Egypt to his steward warned him that the value of the Italic coin was to be reduced to half a nummus, and urged him to dispose of all his Italic currency at once in the purchase of commodities.⁴⁸ The writer evidently interpreted the proposed action of the government as inflationary, whereas it was really deflationary. The only way of dating the letter is partly on the basis of the script, which allows a wide variation from the middle of the third to the middle of the fourth century; and partly by the fact that it was written when two or more emperors shared the power. Whatever the meaning of the Italic coin, it evidently belonged to a period when imperial and Alexandrian issues were still distinguished, and probably before the Italic currency was widely accepted. One other reference to Italic currency is found in papyri, but it unfortunately throws no light on the problem.⁴⁹

We mentioned above that Valentinian III fixed the value of the solidus at 300 nummi per carat (7,200 nummi per solidus).⁵⁰ It is interesting to find a papyrus dated early in the sixth century giving the value of a carat as 300 myriads (of denarii). It is tempting to suggest that this sum was the equivalent of the 300 nummi of Valentinian III. In the sixth century public and private accounting was almost universally in terms of gold. A few cases when payments were made in denarii imply that they had attained a certain stability. The bronze coins of Justin I bear marks of value, and this practice was evidently an effort to maintain stability.

The steward on Apion's estate sometimes collected a tax or assessment in bronze denarii for which he usually entered the gold equivalent. Thus about 557 an equation of thirteen carats with 2,800 myriads of denarii, and about 576, two equations, one of eleven and a half carats with 2,400 myriads of denarii and another of thirteen and a half carats with 3,000 myriads, give impossible fractions. It is probable that there was a hidden fee for collection and that the carat was equal to 200 myriads instead of 300 myriads as at the beginning of the century.⁵¹

The equation in 618 is the last recorded in the documents and gives seven and a half carats as equal to 16,000 talents.⁵² On the assumption that a half carat was deducted from the former as the cost of collection, the carat was worth 300 myriads. This depreciation of the drachma may have been due to the Persian conquest, but for the greater part of the sixth century the bronze currency of Egypt was fixed in relation to gold, and the long spiral of inflation begun under Diocletian was finally ended.

The inflation in Byzantine Egypt which we have described was in terms of fiduciary currency only. At some stage in this movement it apparently took on the form of assigning higher values to the bronze denarius or drachma, which was still called silver in the documents. One may question whether this was true inflation when the owner of the coin suffered no loss. It was inflationary, however, in that loans and mortgages made in terms of the fiduciary currency were wiped out or greatly depreciated, unless the creditor had protected himself in some way. In like manner all those living on wages or fixed salaries

suffered, unless adjustments were made to meet the rising cost of living. Such adjustments usually lag behind the rise in prices, although accounts from Egypt imply that wages were adjusted more quickly than one might expect from unenlightened capitalism. The state met the problem for the army and bureaucracy by payments in kind, the capita and annonae.⁵³ The laborers on estates also received allowances of food, following an ancient and well-established practice. It is surprising that the accounts give no other evidence of the development of barter, which one might expect in times of inflation.

While Egyptian records indicate that inflation persisted there throughout the fourth century at least, evidence from other provinces after the edict of Diocletian is lacking. Lactantius says that it failed and was soon revoked, thus implying that inflation was not checked elsewhere. The isolation of Egypt from the rest of the Mediterranean world might, however, readily permit inflation to run its course in this province without affecting other parts of the Empire. If the bronze coinage, now uniform in size and weight in all provinces, was merely revalued in Egypt, the trader arriving in Alexandria would find the purchasing power of his money unaffected in commercial transactions.

Although inflation was itself the result of unsound economic practices, it became a link in the chain of social and economic upheavals that inevitably followed. Alföldi observes that the money fortunes of the middle class were wiped out.⁵⁴ This would be true of any class whose fortunes rested on fiduciary currency. In spite of extensive hoarding of debased

silver in the latter half of the third century, it is probable that the ordinary citizen never kept large amounts of subsidiary currency on hand as working capital, and in times of inflation the prudent person would normally convert it into other forms of wealth.⁵⁵ Alföldi makes the further statement⁵⁶ that "the album senatorium of the late Empire shows an uninterrupted high position of many of the great families of the third century. It was obviously this economic strength that nerved the senate to a new political effort in defense of Italy and its heritage of culture in the fifth and sixth centuries." Some qualification of this claim is necessary, for the Roman senate was hardly functioning in the sixth century, and their defense of Italy in the fifth century was not an outstanding performance. But if the senatorial aristocracy of the third century persisted through the fourth, they fared much better than their forebears in the last century of republican Rome. Since the senatorial album was made up of landed proprietors, it is clear that the large estate fared better than that of the small farmer, perhaps because the fields of the former were more widely scattered and more diversified, so that if one was pillaged, others might remain unscathed. In the revolutionary period the provinces fared in different ways; Africa and Egypt escaped barbarian raids almost completely and were not on the route of marching legions; Britain was protected by the sea from foreign invasion; Gaul and Asia Minor not only suffered from invasion but were also the main highway for troop movements.

If Alföldi's claim for the senatorial aristocracy of

Rome is true, why did the provincial aristocracy, represented by the senators of the municipalities, fail to survive the economic crisis? That they did not is shown by the legislation preserved in the Theodosian Code respecting the regimentation of the curiales. The standard specific against inflation is the prompt conversion of fiduciary currency into gold, real property, or the like. Yet circumstances alter cases, and the revolutionary third century was no time for the undue display of wealth, when the imperial agents sought revenue wherever it could be found. Nor was the purchase of land in many provinces advisable when barbarian invaders and protecting troops joined in indiscriminate pillage. In spite of these deterrents the estates of the Roman aristocracy seem to have escaped loss and even grew larger. We may suspect that the more powerful landlords not only purchased immunity from military requisitions, but that in return for their financial contributions to the exchequer they received large grants of land in lieu of repayment. Possibly at the same time they purchased the right to bind unwilling tenants to their leasehold in perpetuity. In the chain of events of which inflation is one link we may trace the regimentation of the social orders; the peasants on their leaseholds, the members of the industrial guilds in state service, the curiales, or the urban aristocracy of the provincial cities.

It is of considerable interest that the adoption of a sound currency of silver and gold by Diocletian and his successors did not have any effect in halting the rise of prices in terms of the fiduciary coinage. According to Egyptian records, prices in drachmae

or denarii continued to be quoted in astronomical amounts down to the seventh century, although it would appear that a certain amount of stability had been attained by the beginning of the sixth. A beginning was made in the fourth century, when the government began to collect gold and silver instead of fiduciary currency.⁵⁷ Some of the gold was acquired by forced requisitions. Other amounts were collected by an official (*ἐπιμελητῆς χρυσοῦ* or *χρυσίου*) who may have acted as a requisition officer or a tax collector. In his reports he usually stated that ten grams of silver were collected for every one of gold. Toward the end of the fourth century the tax for recruits was collected in gold. Assessments for other purposes were made in terms of gold, and if we had the full evidence we might find that taxes in gold and in fiduciary currency were so rated that the peasant preferred to pay in the former whenever possible.⁵⁸ The guilds may have encouraged the movement. The tax on trades was collected every five years and was said to be very burdensome. In Egypt the responsibility for the collection seems to have been placed on the guilds, and they made monthly assessments on their members.⁵⁹ Since the fiduciary currency in the guild treasury depreciated in the course of the five-year period, it is probable that they protected themselves against loss by insisting on payments in gold (*collatio auri lustralis*). In any event, it is clear that by the beginning of the sixth century all taxes, except for amounts less than the triens, were collected in gold, and at this time accounting in terms of gold had become universal.

Few papyri are preserved from the fifth century,

and we know little of major reforms in that dark period. This alone is certain; the gold standard was kept unimpaired ever since the reforms of Constantine. Most important of all, the budget of the Empire was brought into balance, and apparently the issues of fiduciary currency were strictly limited to commercial requirements for small change, and were no longer employed to make up deficiencies in imperial revenues. When this happened the long agony of inflation came to an end, and economic sanity was once more restored.

III

LAND TENURE

DIFFERENT systems of land tenure developed in various parts of the ancient Mediterranean world. In the older kingdoms of the East ownership was vested in the priest-kings of Egypt and Mesopotamia or in the temple states, which long survived in parts of Asia Minor. The story of Joseph in Egypt as told in Genesis reveals a tradition of private ownership which disappeared under the pressure of economic necessity. This account undoubtedly contains an element of truth, but the development of the complicated system for controlling the Nile flood was evidently owing to the superior scientific knowledge and engineering skill of the priestly class. As the priests brought new lands under cultivation, the power and wealth of the temples and of the temple rulers grew. The centralization of power in the hands of a single Pharaoh or priest-king for all Egypt was a natural evolution, since unified control of the irrigation system was necessary for the economic welfare of the country. The ownership of the land was shared by the king and the temples. The royal lands under the Ptolemies became the property of the crown (*γῆ βασιλική*), which they administered along with the sacred land (*γῆ ἱερὰ*); the revenues of the latter they shared with the temples. Under the Ptolemies a few grants were made to Greek settlers, and further refinements appear in the classification of land; but the vast area of arable land remained under

the control of the kings, and this system was continued by Augustus and his successors with slight change.¹

In the pastoral economy of early European tribes their grazing land was evidently held in common. With the introduction of agriculture, the principle of private ownership seems to have been recognized very early, and the Indo-European invaders apparently brought this concept with them to their Mediterranean settlements. Traces of community ownership survived until late. The *res publica* of Italian cities represents the common land, where each citizen could pasture his flocks on the payment of a requisite fee. The right of the gens to succeed to the estate of a member who died intestate and without heirs was recognized in late republican times. The right to own land was the privilege of the citizen, and at Rome the Servian constitution gave unusual electoral power to the larger landholders. Throughout Roman history the ownership of property gave social standing to the possessor. The desire for land found expression in the colonial movement, in the social legislation of the Gracchi, and in the satisfaction of the claims of veterans.²

The last two centuries of the pre-Christian era witnessed an economic revolution of great importance to the western Mediterranean. Slavery had long been an established institution, but had usually been a minor feature in the Graeco-Roman social order. The sudden expansion of Rome in the second century before Christ increased the number of slaves enormously. Sardinia, Liguria, and Spain were happy hunting grounds for inglorious triumphs and booty.

In Epirus the entire nation was enslaved in one day. The victories of Marius brought the survivors of the Cimbri and Teutons on the slave market, and these tribes ceased to exist. While the Roman world was being flooded with cheap and abundant slave labor, Italy was undergoing fundamental changes. Southern Italy had been devastated and laid waste in the Hannibalic wars. The Roman allies and Latin colonies were drained of their young manhood in that struggle, and the constant wars of the next two centuries gave them no chance for substantial recovery. The census returns show a steady decline in the number of Roman citizens in the quarter-century preceding the Gracchi, and we may well believe that conditions in Italian towns were still worse. At any rate it is clear that wealthy Romans, particularly those of the senatorial class, absorbed vast areas by purchase or by lease, and that these estates were worked primarily by slaves. The attempt of the Gracchi to repossess the public lands for the state and to lease them in small holdings to free peasants met with violent opposition from the landed proprietors, who murdered the reformers and blocked their legislation. At the end of the second century the tribune Philip claimed, and apparently with some measure of truth, that fewer than two thousand Roman citizens owned land in Italy.³

In the last century of the Republic civil wars and proscriptions succeeded in accomplishing what the Gracchi had sought to do by constitutional means. But the settlement of veterans on the confiscated lands proved only a temporary check to the growth of Italian estates. The small farmer depended on

cereal culture, which was no longer profitable in competition with cheap grain from the provinces. Even though Augustus purchased land for his veterans and founded colonies which he boasted were still flourishing when he wrote his *Res Gestae*, it seems certain that he was blinded by what he wanted to believe. So long as Rome, the chief market for Italy, was supported by provincial tribute, farming in Italy could be profitable only for grazing and for the more or less capitalistic vine and olive grower. Sheep provided wool, which was in steady demand for clothing, and cattle provided transport as well as leather. But to be profitable pasture lands had to be fairly extensive; large flocks could be handled by a few slaves. Vineyards and olive groves required capital as well as experience. Both had to be protected by legislation in the republican period, and the prohibition of vineyards in the provinces continued in some degree down to the third century.⁴ Farming in Italy was obviously far from profitable, and the requirement that senators invest a third of their capital in Italian land shows that the plight of the Italian farmer under the Empire was real.⁵

In the reign of Vespasian, Pliny the Elder wrote that the latifundia were the ruin of Italy. Nerva and his successors sought by alimentary laws to improve the lot of the peasants and to increase the numbers of the old Italic stock in the rural districts, but state charity had no constructive value, since the fundamental cause of the plight of the Italian peasantry lay in the fact that it was impossible for them to compete with the cheap grain which poured into Rome as tribute. It is true that some improve-

ment in Italian industrial activities may be discerned in the first century of the Empire; the improvement, however, was temporary and soon ceased.⁶

In the Western provinces the growth of estates can be attested in some detail. In Sicily the free peasantry had largely disappeared, as is indicated by the slave wars. The declining number of cultivators in Sicilian towns, of which Cicero spoke, was probably not so much the result of Verrine misgovernment as an indication of the concentration of property in fewer hands. This process evidently continued into the imperial period. Similarly, half the province of Africa under Nero was said to be owned by six men, who were put to death on some charge, and whose property apparently became imperial domain. Numerous villas found in Africa indicate that large estates still existed, and the African uprising against Maximinus was evidently inspired by private landowners who resented the oppression of his agents. The devastation of the centuries of pacification in Spain undoubtedly gave the investor opportunity to acquire land. The fortunes of the family of Seneca were undoubtedly laid there, and Trajan was the first Spaniard to become emperor. Other concrete evidence for wealthy Spaniards is lacking. In Gaul the ruins of villas and the survival of names of Roman families in place names, as well as the existence of medieval baronies, furnish the chief evidence for large estates. For Britain a few villas have been excavated, which suggests estates of some size, but apart from the story that Seneca had large loans in Britain and that the revolt of Boudicca was caused by his sudden calling of his loans, there is little evidence of

wealth in the island, and the villas which have been uncovered do not indicate very extensive estates.⁷

The Balkan provinces yield very little information about the manner of life of its peoples. This region took the first impact of the tribes migrating from the East and was less secure than other provinces. The village community seems to have been the basis of the social order, but whether or not they developed into a feudal economy is uncertain. Justinian retains in the *Codex* the rules governing the *coloni* of Thrace and Illyricum, and one must assume that many peasants were of this status. The vacant land in Epirus evidently gave opportunities for the growth of estates, and Atticus had considerable investments there. The families of Herodes Atticus in Athens and of Eurycles and Julius Theophrastus in Sparta acquired considerable wealth; whether this was derived from the poor soil of Greece or from other sources is quite unknown. The romance of Dio Chrysostom pictures Euboea as fit only for hunting and grazing.⁸

In Asia Minor there was a considerable accumulation of wealth in the imperial period, and this could come either from trade or from landed estates. There is, however, little evidence either for great private estates or for serfdom in the Roman period. Tacitus mentions the estates of Rubellius Plautus in Asia and of Cassius Asclepiodotus in Bithynia. Dio Chrysostom evidently owned considerable land. The wealth of generous benefactors such as Opramoas may have come from trade. For Syria and Palestine, Libanius implies the growth of estates by patronage when the collection of taxes became oppressive.⁹

While the growth of the private estates in the West went on with little or no restraint so long as there was private ownership of land, Egypt remained crown property, with the exception of the small holdings of catocic and other private land held mostly by Greeks. Some grants were made by the Julio-Claudian rulers to members of the imperial family or of the court circle, but it seems clear that these had become incorporated in imperial estates before the end of the first century. Thereafter the only grants of land seem to have been veteran allotments. To some of these the term "colony" is given, although it is obvious that no colonial settlements of the ancient pattern were permitted. The lands sold by the state seem to have been limited to some imperial properties or to abandoned or marginal lands. The latter were sold at low prices and obviously gave no opportunity for developing large holdings. The Greeks, enjoying special privileges in regard to taxation, clung tenaciously to their holdings, and the evidence of tax receipts and land registers of the Roman period is that private estates were small. The taxes on garden lands at Caranis toward the latter part of the second century show that the areas of vineyards held by individuals were sometimes only a fraction of an aroura, and none were large. The accounts of estates in the third century have been in some cases preserved. For example, at Theadelphia Heroninus seems to have been agent for an estate of some size, whose chief product was wine, and it would not require a very large area to bring in considerable income. In so far as Egypt is concerned, the ownership of the land by the crown prevented the development of large estates. Whatever may have been the

development elsewhere, the crown land of Egypt was held by the peasant in small leaseholds; slavery was never prevalent in any form of its agriculture.¹⁰

Although most of the evidence for the second century indicates that the peasants held the crown land in small holdings, there is reason to believe that Alexandrian and other enterprising citizens were beginning to take advantage of the rising prices of wheat by leasing land for cereal culture and subletting to others. This plan seems to have had some support from the state. Thus we find cleruchies at Ptolemais Nea in the reign of Marcus and Verus, each approximately eighty arouras, apparently leased by a company of ten or more. These cleruchies consist of crown, revenue, and imperial estate lands with a small area assigned as epibole at a low rental, but the rentals on these cleruchies run much higher than any other rentals of crown or estate lands known. In the third century these assignments of κλῆροι, usually of eighty arouras, are found at Theadelphia and at Hermopolis. There are several accounts preserved from the latter half of the third century which indicate holdings of some size. The correspondence of Alypius and Heroninus from the Fayûm implies holdings in scattered villages, each managed by an agent (φροντιστής). Although the chief interest of the proprietor was the production of wine, wheat was also raised. Other accounts point to estates of some size, but whether the land was leased or privately owned cannot be determined. There is nothing to indicate that the estates were extensive.¹¹

There is no direct evidence that taxes in kind increased during the Roman period. Various extra

charges were introduced by the emperors, but they were not excessive and were probably designed to cover costs of collection. On crown land the rate of taxation depended on the height of the Nile flood, if the reforms promised by Tiberius Julius Alexander were carried out, and different rates may reflect these variations. Aurelian is said to have added an ounce to the loaf of bread distributed at Rome, apparently without any increase in taxation. His general, Probus, put soldiers to work on the irrigation system, and as a result the yield was increased.¹²

Diocletian in his long reign was able to consider more extensive changes in the imperial administration, particularly in the matter of finance. Beginning with 287 we find a five-year cycle called *ἐπιγραφή*, which seems to have regularized the military annona. After the revolt of Achilleus had been suppressed, the whole system of taxation was overhauled, and a five-year cycle, called an *indictio* with a uniform tax rate, was established for land according to its quality (arable, pasture, garden, etc.). The unit of land in Egypt was the *aroura*, but elsewhere it was called *iugum*. A similar rate seems to have been projected for men and animals called *capitatio*. The new system of taxation led to a reform in Egyptian land tenure. It is not yet clear whether all these changes were initiated by Diocletian, for the evidence is somewhat scanty, but the general trend of events may be briefly traced.¹³

In 297 Diocletian called for a survey of the land of Egypt and set forth a schedule (now lost) of taxation which was based on the use (*ποιότης*) to which the land was put. All land which could be reached

by irrigation was arable (wheat, barley, flax, or rest crops), vineyard, garden (including olives, dates, fruit trees, garden produce, etc.), or marsh (reeds or papyrus). Apparently on these lands a uniform rate of taxation, whether in money or in kind, was established. Like the *ἐπιγραφή* for the military annona, the rate seems to have been determined every five years at first, later every fifteen years, and this cycle was known as the indiction (*διατύπωσις*). This was evidently not the whole story. Certain land declarations from the Fayûm are preserved from the census which followed. These were presented to the censor Sabinus, and in every case the declarer states that he "possesses" (*κτῆσθαι*) the land, whether it be private or crown land.¹⁴ The "possession" of crown land in the majority of these declarations can hardly be accidental. It is known that owners of private property were sometimes assigned a certain amount of abandoned land for whose cultivation or for whose taxes they were responsible, but there is no indication of such *ἐπιβολαί* in these declarations. Later documents indicate that the titles to property were determined by Sabinus, and evidently he had wide powers as censor. Whether or not he was empowered to grant titles of "possession" to crown land is unknown, but it has been noted that crown land rapidly disappears from Egyptian records. There is a reference to it in a register of Theadelphia which is probably not later than 322, and a lease of crown land at Oxyrhynchus is mentioned in 332. Still later (362) a contract of private sale described the property as crown land, in which the survival of the term is merely a legal device to show whence the original

title to the land was derived; for land sold by private contract between two citizens cannot be crown property. Similarly, hieratic land seems to be last recorded in a register which is dated on palaeographical grounds in the late third or early fourth century. It is still more surprising to note that the imperial private estate, the *γῆ οὐσιακὴ*, also disappears. Usiac land is mentioned in a document of 322, where it is described as property which had come to the owner by inheritance, and in 330 it is the subject of private sale.¹⁵

Although much of the crown land seems to have become the private possession of the individual, other disposition seems to have been made of the rest. In the heading of the land register of Theadelphia cited above the land is described as village possession (*κτῆσις κωμητική*), and in the record of individual holdings, both crown and private lands are included. This concept of village possession seems to be new. In the earlier period the village was sometimes a unit for taxation, but there does not appear to have been any responsibility of the village community for the payments, although village officials not infrequently paid special assessments. It would appear that Diocletian, recognizing the village as the most important unit in cultivating the soil, constituted the land around each village as its peculiar responsibility. Thus the crown land became in a sense the village territorium, although it later became private property. While there is a distinction between villagers and metropolitans in tax receipts, there is no clear evidence that cities were given any land for a municipal territory.¹⁶

Although the records of the early fourth century are disappointingly few, the evidence points to a rapid transformation of crown, hieratic, usiac, and other classifications of land to private possession. This is clearly established in the great register of Hermopolis preserved in the Florentine collection of papyri. On palaeographical grounds Vitelli dated this in the fourth century, and prosopographical evidence enables us to place it somewhere between 330 and 350; probably 340 would not be an inappropriate date. This register lists in alphabetical order the holdings of all citizens living in the West Garrison and of all Antinoopolitans having property in the Hermopolite nome. The total area is somewhat over 20,000 arouras. Approximately 17,000 arouras are described as private land, about 1,450 arouras as public (*γῆ δημοσία*), and a small amount (about 100 arouras) as civic land (*γῆ πολιτική*); the remainder has no descriptive title, but is merely listed as of such and such a pagus. The meaning of the term public land is uncertain. The civic land (*γῆ πολιτική*) was quite small and apparently did not belong to Hermopolis, since another fragmentary register, probably contemporary, lists a small area as *οὐσία Ἑρμοπολιτική*, which seems to have been city property, possibly a gift or an endowment of some kind. Such civic land may have been a survival of some endowment of Alexandria, the city par excellence of Egypt. The land without a descriptive epithet may have been land under the control of the pagus, although it is not impossible that the scribe may have omitted the description of the land through carelessness. This question cannot be decided until more

evidence is available. The citizens of Antinoe likewise held their land in the Hermopolite nome in exactly the same way as other Hermopolitans. Under their holdings appear some *οὐσίαι* (*Οὐλπιανή, Πλατωνική, στάβλου*), which are obviously not imperial property but are probably survivals of endowments granted by Hadrian and Plotina (?) for the benefit of Antinoe. The *οὐσία στάβλου* is probably a similar endowment for horse racing.¹⁷

This register, if correctly dated about 340, shows that the old classifications of land were completely lacking at Hermopolis. Since the terms crown, hieratic, and usiac lands never appear in later documents, it seems safe to assume that the process of transferring these lands to private possession, presumably initiated by Diocletian in Egypt, was completed by Constantine, or certainly by the time the Hermopolis register was compiled. There is no evidence of the process whereby this transfer was accomplished. One might assume that the imperial need for financing the new army and bureaucracy led to the sale of these lands. There is as yet not the slightest evidence for any such transaction. Possibly tenures held by peasants in what were virtually hereditary leaseholds, were converted into private possession. The only difference was that, whereas as tenant he paid a rent to the state, as possessor he paid a tax instead of rental.

While the usiac land disappeared as such early in the fourth century, the imperial estates continued to exist, or perhaps it may be more correct to say that they developed under another form. In 322 the imperial property at Oxyrhynchus was called patri-

monialia, and apparently such land within the individual pagi was administered by a member of the municipal senate as a form of liturgy.¹⁸ At this time the liturgy was obviously not an onerous one since this senator had also been appointed as superintendent of the express postal service, without any protest on his part at serving a double duty. Somewhat later the imperial property in the Fayûm was called *δεσποτική κτήσις* and was administered by an imperial procurator, who called upon the military prefect to furnish troops to enable him to collect the revenues.¹⁹ A fragmentary imperial constitution dealing with the Thebaid, dated 425, gave tenants the right to purchase their leaseholds.²⁰ Possibly the village called Patrimonialia in Oxyrhynchus represents a former imperial estate where the tenants had become owners of their leases, and where Apion seems to have owned or leased land as part of his estate. In the sixth century the imperial property was known as "the divine house" (*ὁ θεῖος οἶκος*), but few documents refer to it explicitly, and nothing can be determined about its extent. Apparently the old usiac land was treated in the same way as crown land by Diocletian, but part of it, including mines, quarries, and perhaps papyrus marshes, may have gone into the *δεσποτικαὶ κτήσεις*. Later the imperial private property once more grew by fines, confiscations, and the like.²¹

It was soon obvious that, if a uniform tax was imposed upon all arable land, there was no necessity for maintaining the manifold classifications of former days. Evidently Diocletian with his Dalmatian peasant background was little concerned with preserving useless traditions. Early in his reign he had

reformed the administration of imperial estates in Egypt and eliminated much useless machinery. Although his reorganization of the imperial bureaucracy must have increased the number of officials in the higher ranks, there must have been a considerable reduction of the local bureaucracy in Egypt, where elaborate reports and painstaking calculations of taxes were no longer necessary.

The surrender of its title of ownership by the crown in favor of private tenure carried with it the danger that the great latifundia of the Western Empire might now develop in Egypt. Some tendency in this direction in the third century has been noted, but it seems to have been limited to a few wealthy Alexandrians, and their holdings were comparatively small. For the fourth century our chief source of information is the great land register of Hermopolis described above. The names of 470 citizens were listed therein. The average holding was forty-four arouras. The largest comprised 1,370 arouras held by an unspecified number of heirs of Ammonius, and was still undivided. Eight citizens held more than 500 arouras each (about 300 acres), but these were exceptions. This register seems to indicate that large estates were in process of development, although they are still far from the baronial kingdoms of the West. It may be noted that few Roman names appear in the register, and that the great majority were Greek or Hellenized Egyptians. Very little capital came into Egypt from the West, and the province remained primarily for the Egyptians.

While there is no evidence as yet for land holdings in other cities, a tax register of Philadelphia,

dated in the second half of the fourth century, describes the citizens as possessors (κτήτορες), and the assessment levied on each indicates that all were in approximately the same category so far as material possessions were concerned.²²

For the late fourth and the fifth centuries the papyri furnish scant evidence. For this period a series of constitutions preserved in the Theodosian Code seem to deal primarily with conditions in Egypt, and to reveal the imperial efforts to check the growth of great estates in that diocese, particularly by legislating against their development through patronage (patrocinium), the protection offered by powerful officials of the bureaucracy, or by wealthy landlords against oppression by unscrupulous tax collectors.²³

The first constitution was issued by the emperor Constantius in 360. He mentions a multitude of coloni (multitudo colonorum) who had sought the protection of officials and had deserted the village group (consortium vicanorum) to which they belonged. The group had been compelled to pay the usual quota of taxes, and it was they who had brought the matter to the attention of the emperor. Constantius ordered that the patron of the defaulter should pay the group the amount which they had been assessed for the defaulter, and that all who sought his protection should be restored to their former status in the village. This constitution was followed by others which imposed further sanctions and penalties against patronage. Finally, a constitution of Theodosius dated 416 gives us the information that a commission of three had been appointed

sometime before with wide judicial powers to examine and void all titles of ownership acquired in this way. This commission seems a curious reminiscence of the Gracchan land commission, and it faced the same opposition of vested interests. Theodosius abolished it and transferred its judicial powers to the Augustalis, who was authorized to investigate all titles acquired since 398. Presumably further inquiry into titles acquired before that date was discontinued, and if any such titles remained they were regarded as valid. But patronage for the future was utterly forbidden, and the very name of patron was abolished. The right of possession was confirmed to citizens of *metrocomiae*, but no alien could acquire this right unless such possession had been acquired before 398. The latter right was confirmed by Zeno, and since it was retained in the Justinian Code it was evidently enforced in the sixth century. Capitalists sought to evade the law against patronage by means of fictitious leases and sales. The practice was forbidden by a law in 441, which was reënacted by Leo in 468 and incorporated by Justinian in his Code.²⁴

It has been generally assumed that, since the great estates continued to develop in the West, the constitutions of the emperors applied to Egypt were ineffective to stop the growth of estates in that diocese. This assumption, however, fails to take into account the evidence from papyri. This much is clear. The name of patron does not occur after Theodosius in any Egyptian document. Moreover, if the accounts of Apion are examined, it will readily be seen that his holdings were distributed in small areas throughout several *ἐποίκια* or *κτήματα*, and even

though some documents may claim in flowery terms that a village belongs to him as pagarch, not a single account that is preserved bears out this claim.

The documents from Aphrodito show that two of the most prominent citizens were Dioscurus and Count Ammonius. The accounts of Ammonius prove that much of his land was leased from neighboring monasteries and sublet to others with small profit to himself. The tax accounts of Dioscurus indicate that his holdings of arable land were small, and that most of his income was derived from stock raising. An estate at Hermopolis was owned by a widow. On her death her sons ran the estate for four years before the estate was settled and careful accounts were kept. Had the estate been equally divided among the four sons the yearly income of each would have reached the total of seven and one-half solidi. After clothing, food, and miscellaneous expenses were deducted, the margin of profit could not have been that of a lord of the manor. The estate of Olybrius in Upper Egypt affords a different picture. Apparently this man belonged to the consular family whose members had held high office at Constantinople and whose Egyptian possessions may represent an imperial grant. Although no accounts have been preserved from his estate, a fragmentary document indicates that a fine was imposed upon him for some unknown reason, possibly for attempted evasion of taxes. The fine, or arrears of taxes, amounts to nearly 20,000 artabas of wheat and somewhat more of barley. If the figures are correctly read, the estate must have been fairly large.²⁵

The excavations at Oxyrhynchus uncovered a

number of documents which came presumably from the archives of the family of Apion. Since the head of the family sometimes held the office of pagarch, it is not always easy to differentiate between official and private accounts. As we have indicated, the holdings of this family, whether owned outright or held in lease, were rather widely scattered in small parcels and do not resemble the compact Western baronies, which included entire villages. Other families besides that of Apion held land at Oxyrhynchus, but they have left few documents, and there is insufficient evidence to determine the size of their estates.²⁶ From the Fayûm we have a large number of minor receipts, the *Kleine Texte* published by Wessely, but whether these came from a single archive or from widely scattered finds is unknown. In the reign of Justinian a certain patricius apparently had considerable property, and the "noble house" seems to have employed a number of buccellarii.²⁷

The peasant proprietor of the late Byzantine period has left few records, and only incidentally do we learn of his existence. The village of Aphrodito, once a city and at some unknown period reduced to the status of a village of Antaeopolis, had a large number of possessors who with the presidents of the labor guilds formed a sort of village council. None of these had the position of a great landed proprietor, and if a register of money taxes is correctly assigned to this village, the assessments imposed on the various members of the community indicate an equable distribution of property. At Oxyrhynchus the fines levied upon 120 possessors of Spania for injuries inflicted on their meizon show that large numbers of

the villagers were peasant proprietors.²⁸ Similarly, at Cerce in the Fayûm the villagers took the initiative in rejecting the demands of a detachment of Transtigritani for their military supplies, and the subsequent quarrel which arose between the buccellarii of the noble patrician and the soldiers had nothing to do with the village.²⁹

While the evidence implies that private estates had grown to considerable size in the sixth century, there is no clear proof that any one proprietor had acquired possession of vast areas as in the West. Whether these estates of Egypt were privately owned or were leaseholds from imperial and ecclesiastical properties, or even from small farmers, cannot be determined. But side by side with the large estate, whatever its nature may have been, there were a large number of peasant proprietors in the villages; and as yet there is no evidence that the legislation of Theodosius and of Justinian forbidding the outsider to acquire possession of land in the Egyptian metrocomiae was ever a dead letter.

IV

SERFDOM IN BYZANTINE EGYPT

IN ANCIENT Egypt the priest kings owned the land, and the peasant, as tenant of the Pharaoh, stood in a feudal relation to his lord. Under the Ptolemies the rulers still retained the ownership of the land except for small grants to Greek settlers and soldiers, but relaxed somewhat the control of the tenants, whose new status has been described as semifeudal.¹ The state determined the crops to be sown and exercised general oversight of the tenants and their duties toward their leasehold. So far as known, no law bound the peasant to the soil, but by custom his horizon was limited to the narrow borders of his native village. If a peasant held a lease of land, his children learned the art of agriculture from their earliest years. The leaseholds seem to have passed in hereditary succession. The village population had probably attained a certain degree of stability, and excess population was reduced through famine, plague, or exposure of infants, so that the division of leaseholds did not further reduce the standard of living, which in most cases was on a bare subsistence level.

House economy seems to be the rule in the smaller villages, and only in the larger communities do we find traces of guild organization of artisans. While the son followed his father's trade as a normal custom, there was nothing compulsory about doing so, and

new members could enter the profession through apprenticeship. The development of industrial cities, especially of Alexandria itself, followed when Egypt entered the orbit of Mediterranean trade, and the industrial activity of Alexandria undoubtedly attracted many thousands of the rural population. Thus a tax register of Philadelphia dated in the reign of Tiberius indicates that sixty-eight Philadelphians subject to poll tax were in Alexandria.² There is no evidence that these were sons of farmers or of artisans, but probably many of the former class were included since the number is so large. The doctrine of *origo* did not bind the peasant to his native place, but he was required to register there for the purpose of the census, and his poll tax was paid there. With certain exceptions Caracalla ordered Egyptians living in Alexandria to return to their native villages. Whatever the purpose of this edict, it probably had no permanent effect on the industrial population of the city.³

Under Roman rule, or under any rule, the peasant undoubtedly preferred to remain on the land to which he was accustomed. If he knew no trade and abandoned his lease in his native village, his opportunities for making a living as an unskilled laborer were slight. While the flight of peasants (*ἀναχώρησις*), "the going up" into the desert from the rich valley, was not uncommon under Roman rule, the flight apparently seldom affected the actual tenant of land, but was limited to younger sons of tenants or of artisans. This seems to be indicated by the fact that assessments for the poll tax to pay for the deficiencies of those who had fled became a serious burden in some

villages during the second century. There was, however, no assessment to make up any deficiency in the much more important tax in kind. We may cite one document according to which the village secretary made nominations to tenancies on ninety-six arouras of land at Lagis and Tricomia, whose previous tenants had become disabled or had fled.⁴ It is true that lands on the rim of the desert often suffered because of a poor flood or neglect of the irrigation canals, and a succession of bad seasons caused their abandonment. Thus local conditions might cause a temporary transfer of tenants from one district to another. Whether or not such transfers were voluntary on the part of the peasants, eager to acquire a leasehold and provide a living for themselves and their families, is unknown. The government was concerned in securing a steady flow of tribute, and while it may have exercised compulsion in transferring people from one district to another, there is no evidence of such practices.

Under Roman administration the imperial control of the tenant was somewhat relaxed in favor of greater freedom. Possibly the best way of describing the status of the peasant under the new administration is to say that he was liable to the cultivation of crown land as a public liturgy. In a census list of the late first century, farmers were classified as cultivators of public lands, revenue lands, or imperial estates (*δημόσιοι, προσοδικοί, or ούσιακοὶ γεωργοί*).⁵ While the mention of crown land is common, the use of the term *βασιλικοὶ γεωργοί* is comparatively rare, and the *δημόσιοι* may have taken their place.⁶ A class called *homologi (ὁμόλογοι)* probably included all

natives who acknowledged their obligation to discharge the liturgy of cultivating land. They were exempt for old age, ill health, and probably on special grants.⁷ Claims for exemption, however, seldom appear.⁸

In addition to applying the liturgy to the peasant class, we also find that the government sometimes resorted to the epibole, whereby the landowning class, including veterans, were assigned portions of abandoned land to cultivate.⁹ Although the areas assigned were usually small and the rate of taxation was usually low, the burden seems to have been oppressive. At least it is frequently specified in leases that no epibole was imposed upon the land in question. Procopius seems to think that the epibole was discovered by Justinian as a means of enforcing the cultivation of abandoned lands.¹⁰

Several theories have been put forth to explain the origin of serfdom in the western Mediterranean. Of these the most recent may be briefly stated. Exhaustion of the soil led to the development of the large estate and to the binding of the tenant to the soil. This theory is supported by Simkhovitch and combatted by Rostovtzeff.¹¹ According to the latter, the revolution of the third century was a social struggle between the proletariat and the bourgeoisie, with the army representing the peasant class. Even if one accepts this theory it is difficult to see how the destruction of the bourgeoisie in the revolutionary movement resulted in the enslavement of the tenant to the landed proprietor.

Whatever the cause of serfdom in the West, it is well known that in the third century Egypt was

less affected by revolution and by the ravages of marching armies than were other parts of the Empire. The discontent or revolutionary activity which appeared in Egypt in this period was largely limited to Alexandria itself, and there is no evidence of revolution among the peasantry. There may have been some neglect of the irrigation system, since we are told that Probus put his soldiers to work on the canals, and there is direct evidence that the villages on the borders of the Fayûm were suffering adverse economic conditions at this time.¹² Egypt generally, however, did not suffer from soil exhaustion so long as the Nile flood continued to bring down its annual load of silt.

It seems clear that, whatever may have been the cause of the development of serfdom in the West, the institution was legally recognized by Constantine early in the fourth century. It is not our purpose to trace the development of serfdom into the feudal baronies of Western Europe, but it seems advisable to examine the assumption that the conditions of the Western world were *ipso facto* universal in all parts of the Mediterranean.

We have already noted the paradoxical development of Byzantine Egypt, where the age-old system of land tenure gave way to private possession on the pattern of Graeco-Roman customs while the central government of the Graeco-Roman world was becoming an oriental absolutism. How did the change in the system of land tenure affect the Egyptian peasant on the former crown lands?

There seems to be a general belief that, because large estates were a characteristic feature of the West,

they were equally characteristic of Egypt. The papyrological evidence, slight though it is for this period, does not bear out this assumption in any respect. The amount of privately owned land in Roman times was slight. In the great tax register of Caranis, dating from the end of the second century, most of the owners of garden land had very small plots, and evidently they clung to their right of possession with great tenacity.¹³ It is quite possible that the original grants were inalienable since the transfer of possession was rarely an actual sale but was a cession of the property. It is probable that when the crown lands came into the possession of the village peasants they were equally tenacious of their new rights. A register of the fourth century from Philadelphia indicates that the contributors were all listed as possessors,¹⁴ and in the sixth century the villagers of Spania in the Oxyrhynchite nome evidently consisted largely of possessors.¹⁵ In the land register of Hermopolis, the largest estate was 1,300 arouras while the average holding was forty-four arouras.¹⁶ Hermopolis was a rich and prosperous district, but we must agree that an estate of 800 acres was far from the baronial estates of the Western world.

For some light on the status of the Egyptian peasant during the dark period of the fourth century we may turn to the legal documents preserved in the codes of Theodosius and Justinian. But in using these documents we should be on our guard against assuming that these constitutions had universal application in every part of the Empire, and unless a rescript or constitution was addressed expressly to Egypt there is no reason to assume that it applied

there. We find a group of six constitutions, however, in the eleventh book of the Theodosian Code which deals with village patronage.¹⁷ Three of them certainly refer to Egypt, and probably all of them were issued with a view to conditions in this province. The first of these was issued by the emperor Constantius in 360, or not long after the disappearance of the crown land, and may be translated as follows: "You have informed us that a great number of coloni as constituted in Egypt have sought the patronage of officials, even of military governors who are protected by their office. It is our will that all who have been so presumptuous as to conceal such persons and who, by promising protection, have prevented them from the performance of their public obligations, shall themselves be compelled to pay the charges which the fellow villagers of the colonus who had deserted his associates have been required to pay from their own resources. See to it that those coloni whom such men have taken under their protection be removed therefrom."

These coloni are not to be identified with the coloni of the western Mediterranean. It is evident that when the state relinquished its possession of the land and it had become part of the village territorium, the village as a sort of juristic personality was responsible for the taxes and assessments on the land. The former tenant of the crown land, whether he had become an independent possessor or a tenant of the village land, was no longer a feudal or a semifeudal tenant of the crown or of a great landed proprietor, but was responsible to his village group—the consortium vicanorum. Perhaps it is possible to speak

of the peasant as bound to his village guild, but he was not the serf of a landed proprietor. We do not know what conditions in the villages had led the colonus to seek the protection of powerful officials. Ordinary taxes seem to have been low, but special assessments may have been unduly severe. Officials of high rank, familiar with the conditions in Western provinces, may have sought to build up estates in Egypt by promising certain immunities to the peasant if he put himself under their protection.

Of this patronage the papyri give little evidence. Abinnaeus, prefect of the camp at Dionysias, was sometimes called patron in correspondence addressed to him, and it is clear that his power was great, but that he used this power to acquire property is nowhere indicated.¹⁸ At some time in the fourth century the citizens of Euhemeria addressed a certain Nechos as patron.¹⁹ Apparently he had accused the villagers of harboring bandits, or of doing some injury to his family or possessions. Their reply was as follows: "We desire you to know, our lord Nechos, that never in your father's lifetime nor in yours have we surrendered our persons to you. Since we do what is required of us annually, we yield ourselves to no one. There are no aliens in our village, for we have two signal towers and no one can enter on foot or mounted (without detection?). If anyone does harm to you or to your most excellent sons we do not oppose you (in exacting justice?). Exact whatever seems fair to you." Although the letter is addressed to Nechos as patron, the dignified tone of the communication is clearly not that which one might expect from a serf to his lord. The relation-

ship of the Euhemerians to Nechos is certainly not serfdom.

The most important document dealing with the Egyptian coloni in the fifth century is a constitution issued by Theodosius in 415. By this law the emperor abolished the land commission which had been appointed to investigate the titles acquired in Egyptian land by patronage. The judicial powers of the commission were transferred to the Augustalis, who was empowered to act on all such titles acquired since 396 (?). Titles acquired before that time, if not already extinguished, were to remain, but in the future the very name of patron was to be abolished. The constitution protected the residents of the *metrocomiae* in their possession by forbidding aliens to acquire possession, though they could transfer it to other members of the community.²⁰ There is no reason to believe that this constitution was a dead letter. The name of patron does not appear in later papyri. The law protecting the villager in his possession was reënacted by Justinian, and it may be observed in the accounts of Apion that his possessions were limited to *epoikia* or hamlets, and that none of the accounts indicate that whole villages were in his possession.²¹

The constitution of Theodosius, however, throws some light on the group called *homologi*, "who, having abandoned the villages to which they were attributed, have transferred themselves to other villages or to other masters, shall be required to return to the abandoned land, or if they are detained by force, those who hinder their return shall be held liable for their obligations." The *homologi* are not

found in the papyri of the Byzantine period, but Theodosius indicates clearly that the class continued to exist. Some of the peasants had never acquired possession of land or, if they had done so, had lost it in some way. But these homologi differ from serfs. They were subject to the liturgy of cultivating land, and were required to take over abandoned land of the village territorium, thus becoming members of the consortium vicanorum, to which they were in some measure bound, but they could take leases under other proprietors. Obviously, if the land was abandoned because of lack of irrigation, there was no point in compelling them to cultivate a sand heap unless flood conditions made such cultivation possible. How large a group they were it is impossible to say, but Theodosius acted on the complaints of the village authorities, and it was their interests and not that of great landed proprietors which he was protecting.

A fragmentary constitution of 425 gave the coloni of the Thebaid the right to acquire possession of their leaseholds of imperial estates provided two or more were associated in the act of purchase.²² So far as known, the serf in other parts of the Empire enjoyed no such capacity, but was bound to his status in perpetuity.

This is the sum of our evidence about the colonus of Egypt in the fourth and fifth centuries. The clearest proof of compulsion to cultivate land comes from the villages.²³ It would appear that the Byzantine emperors placed the responsibility for the cultivation of Egyptian land on the village communities. Many, perhaps the great majority of the vil-

lage community, enjoyed the right of possession of their former leaseholds. But all were subject to the liturgy of cultivating the land whether as possessors or as tenants of the village territorium. Whether the possessors were also called homologi is impossible to say; when Constantius speaks of a "multitudo colonorum per Aegyptum constitutorum," he is not describing the western colonus or serf on a great estate. One cannot deny that Egyptian officials sought by patronage to develop their estates in Egypt along Western lines, but the emperors were speedily alive to the danger and fought this development from the very beginning. There is no reason to believe that their efforts were fruitless. Nor is it necessary to assume that the great estates developed along the same lines in all parts of the Empire where local conditions differed fundamentally. In Egypt the Nile renewed the top soil every year, and the problem of marginal lands had to be considered only when there was a failure of the flood or when the canals were neglected. In other parts of the Empire the exhaustion of the soil was a factor of very serious import, especially in an age when artificial fertilizers were unknown. But the state needed revenues in money and in kind in ever-increasing quantity while the great landed proprietors wanted revenue at whatever cost. Compulsory tenancy was no solution; both the landlords and the state, however, united to bind the tenant to the soil.

The codes distinguish two kinds of coloni, *originales* (*originarii*) and *adscripticii* (*inquilini*), without definition of the terms. It is clear from a rescript of Valentinian, addressed to the governor of

Gaul, that the *adscripticii* were bound to the land in that community where they were born, brought up, and enrolled in the census.²⁴ Presumably, the second generation of *adscripticii* were known as *originales*. They and their descendants, male and female, although of free birth (*ingenui*) in the eyes of the law, were practically inferior to slaves. Theodosius, evidently finding it difficult to draw a distinction, hit upon the solution of calling them freeborn but slaves of the soil (*videantur ingenui, servi tamen terrae ipsius cui nati sunt*).²⁵ As a matter of fact, the slave could be set free, whereas the status of the *colonus* could not be changed in any legal way.²⁶ A constitution ascribed to Anastasius²⁷ shows how narrow the distinction was: "Some tenants (*coloni*) are *adscripticii* and their *peculium* belongs to their masters. Some, after a period of thirty years, become tenants on lease (*μισθωτοί*), remaining free along with their gear. These also are compelled to cultivate the land and to pay the taxes. For this is profitable both for the proprietor and for the tenants." It would be of interest to know where this law was applied and how it was interpreted. The predecessors as well as the successors of Anastasius held that the status of the *colonus* could not be changed in any way. Yet Anastasius seems to have regarded the *colonus* as a virtual slave, since his *peculium* belonged to his master, whereas he seems to distinguish a class called *μισθωτοί*, who became more or less free after a period of thirty years and who retained possession of their tools and equipment, although they were still required to cultivate the soil.

In Egypt the documents of the sixth century

throw considerable light on the status of the peasantry in the village communities. We find a large number of villagers at Spania, for example, who are called possessors, and who were subjected to a considerable fine because of some wrong done to their local magistrate.²⁸ In the land leases of the period there is no evidence of compulsion. Whether the *μισθωτός* of whom Anastasius speaks differs from the ordinary *μισθωτής*, or applicant for lease, it is difficult to say. The tenants on Apion's estate were capitalists of some means who took over quite extensive leaseholds with the idea of profit and quite clearly under no compulsion.²⁹ The term *μισθωτός* can be cited but once, and in this instance it is equated with *μισθιος*, evidently describing a free agent.³⁰ The *adscripticius* (*ἐναπόγραφος*) appears first in papyri in 497 or during the reign of Anastasius. Thus far the term is found only in documents from the archives of Apion at Oxyrhynchus. In all cases the farmer appears as a free agent in entering contractual relations with the landlord. Although he may state in the fulsome language of the period that his village belongs to the excellent Apion (*διαφέρονσα τῇ ὑμετέρᾳ ὑπερφυείᾳ*), the tenant indicates that he is a Roman citizen of free birth by stating that he is called Aurelius, and he usually names his father and mother as well. In one instance he adds that he is a fellow possessor along with his other villagers, and that his brother is manager of the estate in that district.³¹

These contracts (*χειρογραφίαι*) between the *adscripticius* and the landlord may be divided into three types. In one group the farmer acknowledges the loan of some farm equipment, such as a part of a

mill or of a water wheel. It should be noted, however, that the document is an acknowledgment of loan and does not specify any obligation on the part of the borrower. In the earliest of these contracts the borrower agrees to do the work of irrigation blamelessly, to pay the rent cheerfully, and to yield obedience in all things pertaining to the landlord's interest. These provisions do not reappear in later documents, but if they were implicit, they might easily be interpreted broadly enough to bind the tenant to virtual serfdom. In all these loans, however, it is obvious that the proper functioning of the mill or the water wheel was as much to the interest of the landlord as of the tenant, and it is not unlikely that the contract was made to avoid any dispute about the ownership of this piece of machinery which might arise on the termination of the lease.³²

Loans of money constitute a second group of these contracts. In none of these loans is there any mention of interest, statutory or other. This fact, however, need not imply a master-and-serf relation, since the contracts of loans in this period frequently omit all mention of interest. The moneylender had hit upon the device of deducting interest in advance, and perhaps in this way avoided the penalties imposed for exceeding the statutory interest rate of 12 per cent established by Augustus and lowered to 8 per cent by Justinian. In any event the tenant always pledged repayment on the security of his property (*τὰ ὑπάρχοντα*). This clause is important in that the property of the tenant clearly was not regarded as the peculium of the landowner, and as such could not be the subject of a pledge.

Finally, a group of contracts provide security that a tenant will remain on his or her lease, or will be on hand to undertake some liturgy or service. Such security is usually made by an *adscripticius* who is already a tenant on the estate on behalf of someone who is not an *adscripticius*. The accounts of Apion show that in some hamlets the five or six tenants formed a sort of guild in which the members shared some sort of joint liability for the rent or taxes imposed on that area or group. In other districts where there was a limited area under Apion's control and one or two tenants held the leasehold, the landlord probably sought security of some kind to protect himself, and if he had the guarantee of another tenant, so much the better.

From a study of these documents the following facts are clear. The γεωργὸς ἐναπόγραφος on Apion's estate was the owner of property (ὀμοκτηματικός) which was not the *peculium* of the landlord, for it could be pledged as security. He entered into contractual relations with his proprietor, borrowing money, and seed, or parts of machinery to repair a mill or water wheel. Finally, he was always an Aurelius, or a Roman citizen. Unless property, possession, contract, and citizenship are meaningless terms in Egypt, the *adscripticius* on Apion's estate had nothing in common with the western serf who had a *peculium* which belonged to his master, and who, as a slave of the soil, could enjoy neither possession nor ownership. Although the western serf was legally a citizen of the state and freeborn (*ingenuus*), his status, as defined in the law of Justinian, was little better than slavery. The slave could be sold

away from home, and could be given his freedom. The serf could only be sold along with the land which he was compelled to cultivate, and his status could not be changed.

It has been observed that Apion and other landed proprietors in Egypt maintained private prisons in defiance of the law. This, however, is no proof that the prisoners were serfs, nor is it necessarily an indication that serfdom was in process of development. It does indicate that powerful persons were willing to take the law into their own hands to some extent. It seems to have been the revival of the ancient law of *nexum* whereby the creditor seized the person of the debtor and held him prisoner until friends or relatives discharged the debt. It is not likely that Apion seized a tenant on his leasehold to maintain him in idle custody. More likely the prisoners were relatives of some debtor held as pledges until the debt or obligation was discharged. In unscrupulous hands the law of *nexum* might facilitate development of a status of serfdom, but there is no evidence that serfdom existed in Byzantine Egypt.³³

If the status of the *γεωργὸς ἐναπόγραφος* in Egypt cannot be identified with that of his kin in the Anastasian rescript or with the serf of Justinian's Code, how is it to be defined in Egypt? The term *ἐναπόγραφος* implies registration. We find in Egypt that some villages and some private estates enjoyed the privilege of collecting their own taxes (*autopragia*) without the intervention of imperial agents. In such cases the individual who paid his taxes through the estate or village must be registered therein. Thus Stephanous at Oxyrhynchus had her

dowry transferred from her father's name and registered in her husband's district, since the latter seems to have enjoyed the privilege of *autopragia*. Similarly, the *defensor civitatis* at Antaeopolis presided over a hearing at which one of the villages of the pagarchy sought the right of paying its taxes through Aphrodito, which had been granted *autopragia* by the Empress Theodora.³⁴

If we eliminate the *γεωργοὶ ἐναπόγραφοι* on Apion's estate from the status of serfdom, then the sole evidence for serfdom in Egypt during the Byzantine period rests on the *homologi* and the *multitudo colonorum* mentioned in the Theodosian Code as existing at the beginning of the fifth century. The *homologi* are not mentioned in the papyri of the period, but we may well believe that they were to be found in Egypt, although there seems to be no way by which their status can be determined. Probably as members of the village community they were acknowledged members of the guild of farmers under obligation to cultivate and pay the taxes assessed on the village lands. They were entitled to "possess" these lands, and the number of such possessors was great. Whether there was any real distinction between this possession and quiritary ownership in the sixth century is problematic, but it is equally problematic whether the *homologi* of Theodosius can be regarded as slaves of the soil. As we have already suggested, the *homologus* might be regarded as bound to his village guild and obligated to take his proper share in meeting its tax assessments, but this was his nearest approach to serfdom.³⁵ The *multitudo colonorum*, if *colonus* is interpreted as it appears in

the legal codes, and with its usual meaning in the Western Empire, would imply that Egypt was filled with serfs. Here one must be on guard against using Western institutions and applying by analogy these same institutions to the East or to Egypt automatically without taking into consideration the peculiar circumstances of the different provinces. Under the Ptolemies the crown land comprised the greatest extent of arable land in Egypt. Private possession was limited to the relatively small number of Greek *catoeci* and *cleruchs*. These held tenaciously to their property, and the large estate did not develop in this category. Under Roman rule there was no material change. Some grants which were made by emperors to court favorites or to members of the imperial family seem to have expired on the death of the grantee and their lands were incorporated in the imperial estates. There is some evidence that wealthy Alexandrians had estates in the Fayûm in the third century, but whether these were acquired by leasing crown land or by purchase of marginal lands on the edges of the oasis cannot be clearly determined. There is no reason to believe that these estates survived into the fourth century.

The legislation of Diocletian had the effect of eliminating the manifold classification of land hitherto prevailing. Imperial estates, hieratic land, and crown land disappeared from the records. The village became the most important economic unit, and to the village was transferred the possession of all lands within its territory, and incidentally the village, constituted as a juristic personality, was made responsible for the taxes on the land under its juris-

diction. The villager apparently had the right of possessing the land which he formerly cultivated as a tenant of the crown.

Augustus had barred Roman senators from entering Egypt, and there is nothing to indicate that, except for the imperial grants already mentioned, Western capital was ever invested in Egyptian land. This is easily understood when the land was owned by the crown. Did conditions change after the reforms of Diocletian? There is no evidence that outside capital found its way into Egypt. The great register of Hermopolis, dated about the middle of the fourth century, shows a great preponderance of Greek or Hellenized Egyptian names, and reveals that the largest property was the individual estate of the heirs of Ammonius, which comprised approximately 1,300 arouras. We have already pointed out that, when patronage began to show itself in Egypt, the emperors took firm steps to check its growth, and we have no reason to believe that their legislation was a failure. Theodosius took further steps to protect the village peasant by decreeing that aliens could not acquire possession of land within the village territorium. Justinian incorporated this law in his Code, and it is perhaps significant that this clause alone was lifted from that group of laws in the Theodosian Code which specifically dealt with the Egyptian colonate. That is, the great estate and its attendant evils were no longer a problem in Egypt. If we may judge from the instance of a single village, Spania in the Oxyrhynchite nome, the vast majority of the peasants in the villages were possessors. The estates of Olybrius in the Thebaid and of Apion in

Oxyrhynchus were quite extensive, but even at their greatest extent it is improbable that they could have compared with the baronial domains of Western Europe, and so far as our present evidence goes, it may safely be said that in no case can their tenants be described as having the status of slaves of the soil.

V

TAXATION IN BYZANTINE EGYPT

SINCE Egypt was regarded as the private domain of the emperor rather than as a province of the Empire, the revenue from it went into the imperial treasury. Most important were the taxes in kind which were imposed on arable land and were used to feed the people of Rome. Augustus is said to have drawn 20,000,000 modii (6,000,000 artabas) of wheat from Egypt.¹ This was apparently the tribute which was collected after his engineers and soldiers had improved the irrigation system. Whether this amount represented the income from a good, an average, or a low flood cannot be determined, but probably it was the average income at the close of his reign. Augustus added certain supplementary charges, but these were probably designed to meet the cost of collection and were not forwarded to Rome.² While the annual rate of taxation seems to have depended in some way on the height of the Nile flood, there is no evidence that the basic rate was changed during the period from Augustus to Aurelian. The latter emperor is said to have added an ounce to the weight of the loaf distributed in Rome, and it is implied that this increase was given permanence by the increase in the number of the boatmen on the Nile.³ Why this should have affected the total amount of the tribute is difficult to see. The records from Egypt of this period are too scanty to indicate whether

there was any increase of the taxes in kind, and the increase of the weight of the Roman loaf may have been due to the decrease of the number on the dole.⁴

The records show that other taxes in kind were collected, comprising barley, beans, onions, flax, olives, and other crops, although such taxes follow no definite pattern. Grain was purchased for the army, but a fair price seems to have been allowed for the requisitions.⁵ In the third century the land was subject to assessments for the military annona and for other charges which were demanded when there were special troop movements, visits of high imperial officials, or other emergencies; there is no evidence that such levies were a regular tax. Aurelian is said by his biographer to have imposed taxes in kind on linen, hemp, glass, and papyrus; that he really did so has not been confirmed by any document from Egypt.⁶

The Romans collected a large number of taxes in money. Some of them were imposed on land, primarily on land devoted to other crops than cereals, such as grapes, olives, dates, and miscellaneous fruits or garden produce. The rates had originally been light, probably to encourage local production and thus to avoid imports. The Ptolemaic rates were continued by the Romans without change. There was a small charge for irrigation works imposed on private land, and in the third century the crown tax was based on property. Camels, donkeys, horses, sheep, goats, pigeons, and hens were taxed per head. In many instances this tax (*φόρος*) seems to have been regarded as a rental paid for state-owned property. The pasture tax was presumably based on

the number of the flock pastured. The levy called pig tax, sometimes paid along with the poll tax, seems in such cases to have been devised to provide for the purchase of pork; whether for the annona of Alexandria or for the army is uncertain.

Capitation taxes were imposed for baths, dykes, salt, and many other things, but the most important was the poll tax. This varied in different districts and even in the same district, as, for example, at Thebes. Priests and temples had only limited immunity. The Jewish tax is known only from the reign of Vespasian to Hadrian. Romans and Alexandrians were exempt from most capitation levies. The Greeks paid the catoecic tax, but landowners may have been exempt from poll tax.⁷ Artisans paid a tax on trades. In addition to the income from monopolies, the customs dues became an important source of revenue with the great expansion of the import of luxuries from the East. A number of small fees, some of which were exacted sporadically, various supplements devised by the Romans, probably to meet the costs of collection, and many personal and patrimonial liturgies added to the burden of the Egyptians.⁸

The grant of Roman citizenship by Caracalla may have eliminated the old distinction between legionaries and auxiliary troops, but whether other military reforms were effected it is difficult to say. Nor can it be determined whether the change of status in the citizen body had a bearing on their tax liabilities. The census declarations continued at least until the reign of Gallienus, but the evidence for the poll tax after Caracalla is slight. Too much

stress must not be placed on the lack of proof, for tax registers and receipts for the period 212-287 are unusually rare.⁹ The crown tax, imposed on land by Septimius Severus, became increasingly burdensome until it was remitted by Severus Alexander. There may have been a general revision of the system of taxation in money, whereby each nome was assessed a certain amount, and the responsibility for collection was placed on the municipal senate; if so, it would account for the lack of evidence in regard to taxes.¹⁰ Presumably no changes were made in the taxes in kind, although when Egypt or Alexandria was controlled by revolutionary or hostile leaders, they probably confiscated the grain for their own uses.

Inflation affected tax rates indirectly in that the taxes in money remained at the same rate long after inflation had begun. Thus the peasant required ten to twenty artabas of wheat to meet his poll tax of forty drachmae under Augustus. At the beginning of the third century the same tax could be met by selling two or three artabas. Since there is nothing to indicate that taxes either in kind or in money were advanced during this period, the position of the wheat grower must have shown steady improvement. Not until the last quarter of the third century do we find evidence that the monthly rate of the trades' tax reflected the monetary inflation.¹¹ An ostrakon from Caranis in the age of Diocletian shows that the assessment for the military annona was discharged by paying eight drachmae per month. The yearly assessment of ninety-six drachmae at this time meant less than half an artaba of wheat.¹²

While the great reform in taxation was not under-

taken by Diocletian until after the suppression of the revolt of Achilleus, some foreshadowing of his future plans may be found in a five-year cycle, called *ἐπιγραφή*, instituted in 287. This epigraphé was an assessment of wine, meat, wheat, and chaff, and was apparently designed to supply the army. The individual assessments could be commuted for money. Achilleus retained the system and seems to have begun a new cycle in his second year.¹³

The reform of 297 may be better understood if we quote the edict of the prefect issued in 296,¹⁴ which may be translated as follows: "Aristius Optatus, most perfect prefect of Egypt, says: 'Our most provident emperors, Diocletian and Maximian, the Augusti, and Constantius and Maximian, most noble Caesars, having learned how . . . it has been happening that the levies of the public taxes take place in such a way that some persons are being let off lightly, while others are being overburdened, have determined to root out this most evil practice in the interests of their provincials and to give a saving norm to which the taxes shall conform.' Therefore I have publicly set forth the quota of each aroura in proportion to the quality, and the quota of each head of the agrarian population and the minimum and maximum ages of liability, in accordance with the published divine edict and the breviary included in it."

From this edict it is clear that two basic taxes were proposed for Egypt. There was a fixed quota for each aroura of land according to its quality. This was obviously the tax in kind based on the aroura as before, and the quality seems to have been a classification according to whether the land was arable, pasture, vineyard, orchard, marsh, or garden.

If we may judge from the edict alone, since the accompanying breviarium or schedule of taxes is lost, a uniform tax was to be assessed in wheat on all land according to quality. The complicated system of calculating taxes in kind found in the Roman period was swept away. Henceforth public, private, crown, hieratic, and usiac lands paid a uniform tax, and the privileged position of the Greek *catoeci* and *cleruchs*, evidently still maintained in the early Empire, was eliminated.

If the breviarium had been preserved, it might have made clearer what is meant by the per capita tax (*caput*, κεφαλή) of the agrarian population. As it stands, the edict clearly implies that a tax, presumably in money, would be imposed on certain age groups of the rural districts. Nothing is said about the urban population, or whether the tax on trades would be continued, and apparently all the numerous taxes found before Caracalla, if not already eliminated, were to be replaced by a single per capita tax. The customs were under imperial control, and were not included within the scope of this edict.

Diocletian instituted the indiction in 297. Like the epigraphe for the military annona, instituted in 287, which now disappears, the taxes were determined by a budget for a period of five years, and presumably the quota was fixed for that period. If so, the old principle that taxes should be determined by the annual rise of the Nile flood was disregarded. The tax assessment was called *delegatio*, usually expressed in Greek by διατίπωσις, and in some cases χειρόγραφον seems to be related. After 312 the cycle was extended to fifteen years, and this continued throughout the Byzantine period.¹⁵

Whether Diocletian intended to levy on the land a tax in money as well as in kind cannot now be determined. A register of taxes for an estate at Her-mopolis dated 301-305 gives no decisive evidence on this point.¹⁶ Somewhat fuller material is provided by the record which Thaesis of Philadelphia kept on a long roll for the years 309-324. If we may judge from the payment for transport on seagoing ships assessed in 316, the estate at that time comprised 100 arouras. The record of taxes is as follows:

<i>Year</i>	<i>Wheat</i>	<i>Barley</i>	<i>Money</i>
309/312			19,700 dr. (κτηνῶν δημοσίων)
310/11	75½	71½	5,152 dr. (πυροῦ)
			9,864 dr. (ἀχέρου)
311/12	93½	50½	9,864 dr. (ἀχέρου)
			8,732 dr. (πυροῦ)
			12,500 dr. (κριθῆς)
			11,880 dr. (διατυπώσεως, III.1)
312/13	93½	36	9,864 dr. (ἀχέρου)
			32,200 dr. (κριθῆς)
			24,000 dr. (κτηνῶν δημοσίων)
			11,960 dr. (διατυπώσεως, III.23)
313/14	51½	31½	11,500 dr. (κτηνῶν δημοσίων)
			4,656 dr. (ἀργυρικῶν, III.7)
314/15	54	32½	17 T. (τιμῆς πυροῦ)
			5 T. (τιμῆς κριθῆς)
			5,000 dr. (ἀργυρικῶν, V.13)
			18,000 dr. (κτηνῶν δημοσίων)
315/16	53	33	15,000 dr. (κτηνῶν δημοσίων)
			12,000 dr. (διατυπώσεως, V.16)
			5,000 dr. (πυροῦ)
316/17	54	34½	5,800 dr. (ἀργυρικῶν (?), V.10)
			20,000 dr. (ναύλου θαλασσίων)
317/18	54	33	
318/19	54	33	
[319/20]	4[·]	0	
[320/21]	5[·]	0	
321/22	33	14	
322/33	4[·]	0	
323/34	53½	22	

From this record we learn that the tax in kind from 310 to 313 in wheat and barley combined was somewhat less than one and one-half artabas per aroura. Some adaeratio of wheat and barley during these years may have meant that the tax was slightly higher, but, to judge from the value of these grains at this period, the difference was not significant. From 313 to 318 the rate was less than an artaba per aroura. After 319 the tax dropped to less than half an artaba.¹⁷

The assessment for public animals was apparently a tax for the transport of grain from Philadelphia to the shipping depot on the Nile. This payment was usually about 200 drachmae per artaba, but the total for the years 309 to 312 bore no obvious relation to the tax in kind. In 313 to 314 the payments ἀργυρικῶν had no relation to the area or to the wheat or barley, and the basis of assessment is unknown. The delegatio of money was recorded for three years only, and this seems to have been an assessment of 120 drachmae per aroura, although the full amount was collected only in 315 to 316. In the following year the record of payments in money ended, and we are left to speculate whether the money was no longer exacted, was collected through a different agency, or was entered on another roll which has not been preserved.¹⁸

The tax records of the fourth century are comparatively rare and throw little light on the amount of revenue collected or even on methods of collection.¹⁹ The sitologi continued in office until the end of the fourth century, but they were more concerned with the collection of money than of grain in the later

period. Other collectors appear, *ἀπαιτηταί*, *ἀποδέκται* (*ὑποδέκται*), *ἐπιμεληται*, and *παραλημπται*, who probably had specialized functions which can only be determined with more evidence. The military annona was collected by *ἀπαιτηταί* or by *ἀποδέκται*. The *adaeratio* in money, though appearing occasionally, was rare in the inflationary period. The epigraphic of the earlier years of Diocletian does not reappear, but there is little doubt that the soldiers were supplied with grain, wine, meat, oil, and clothing. The local recruiting officer paid the recruit a lump sum on enlistment, and the *aurum tironicum* was levied in gold, apparently as a property tax, in the latter part of the fourth century.²⁰

Special assessments in money and in kind were levied sporadically. Someone at Caranis complained bitterly, after listing five separate assessments in that year, that the "comarchs make the assessments as they please and do not inquire into salaries (?) nor the . . ., because they act in collusion with the *praepositus* and have no regard for the casting of the lot by the village secretary nor for justice, but they make the exactions as they please." It would be interesting to know the author of this document and his purpose in writing it. It is not addressed to anyone and may be a preliminary draft of a petition to the prefect.²¹ The leases of the period usually provided that the lessor should meet all public charges and assessments (*ἐπιμερισμοί*). While the regular taxes imposed by the indiction were low, these special and irregular assessments could be very burdensome.

Since the relation of *capitatio* and *iugatio* has been ably discussed elsewhere,²² it is not necessary

here to do more than to summarize the evidence from Egypt. While it is clear that Diocletian intended a census of the Egyptians and proposed a tax on persons within certain age limits, there is no proof that any census had been held since 258, and probably there were no records on which to base a per capita tax in 297. Whether or not the census of the population went hand in hand with that of the land is unknown. Two declarations from 309 are preserved.²³ In one a son aged twelve is described as subject to tax (*ὑποτελής*). The upper age limit is unknown. Women were not registered, and evidently Diocletian meant to tax males from the age of twelve at least.

In view of the fact that the evidence for the census of the population is so slight, the receipts for the head-tax (*ἐπικεφάλαιον πόλεως*) are somewhat confusing. In the first place we should note that Diocletian had abolished the capitation tax on the urban population in the Eastern diocese, and that Egypt was included therein is shown by the edict quoted above, which called for the census of the rural population. The receipts for the head tax found in Egypt show that this tax was levied on the urban population. In one case the levy was made under the orders of the prefect, in another the catholicus was responsible for the assessment, while the other receipts yield no information on this point. The variation in payments from 1,200 to 250,000 drachmae within a range of fifteen years, when inflation was reasonably controlled, hardly suits a poll tax. Probably we have to do with some sort of assessment, and the variations in amount would best suit a property assessment rather than a poll tax.

A register from a village in the Hermopolite nome in 340 was forwarded to the *praepositus pagi* by the officials acknowledging the per capita assessment of the imperial taxes.²⁴ Opposite each name is a unit or a fraction of a unit in multiples of one fourth and ranging from one fourth to one and one half. What these units mean is unknown, but it is probably safest to assume that they were based on some form of property. A contemporary document from another village in the same nome gives a monthly assessment per capita. In this case each man pays the same amount monthly. In Pachon 125½ men contributed twenty-five talents, while in three other months the same amount was paid by 100 men.²⁵ What is meant by the "half man" in Pachon is uncertain. There is no evidence that women were included in either list or that they were taxed as half a *caput*, as appears to be the case in another province.

A more elaborate assessment from the year 359 indicates that a unit called *caput* was assessed certain amounts for specified purposes. The receipt issued by the *praepositus pagi* to Philadelphé, stated that the payment was made by her on behalf of her tenant for the crops of the second year, and she paid at the rate of one and one-sixth *caput*. In this case it is clear that the *caput* was a certain unit of productive property and had nothing to do with Philadelphé or her tenant farmer.²⁶

In a few documents in which the capita of livestock are mentioned, it is probable that the army ration for animals used in military transport is meant. Thus far there is no clear proof that farm animals were reckoned as tax units, although they may have been included in the property tax.²⁷

Whatever Diocletian meant in his edict by a capitation tax, there is nothing to indicate that a head tax was exacted from the rural population in Egypt. The indiction cycle instituted by Diocletian, if we may judge from the payments made by Thaesis at Philadelphia, was primarily concerned with taxes in kind. There was evidently a tax in money as well, but how it was assessed cannot be determined. The jugatio, if it was a tax in kind, was clearly based on the aroura in Egypt, as the tax in kind always had been. The great importance of Diocletian's system was the elimination of the inequities of the old system and the exaction of a uniform tax on all arable land. If this was carried into effect, it made no difference whether the land was owned by the crown, the city, the church, by the private citizen, or by the emperor himself. If a tax in money was assessed, it would seem that this was not a per capita tax, but, since the Egyptian peasant was now the owner of his former leasehold, was a tax on his property. Thus the jugatio and capitatio in Egypt were in principle the same thing. If there was any difference, the jugatio was a tax in kind, the capitatio an assessment in money, but both were apparently based on the aroura or real property.

The evidence for taxation in the fifth century is very slight and adds nothing to our knowledge of the system. The last century of Byzantine rule yields a far greater number of documents, but few can be precisely dated, and in many cases it is impossible to distinguish between the accounts of private estates and the revenues of the fiscus. Only the broad lines of the system can be determined.²³

In Edict XIII Justinian declared that most of the imperial revenue from Egypt was swallowed up in the collection. Presumably he meant the tax in money, since the tribute in kind was less subject to maladministration and speculation. The latter was fixed at 8 million units, presumably artabas, and this had to be delivered at Alexandria for shipment to Constantinople in August. An important tax register from Antaeopolis²⁹ shows that a uniform tax was levied on land at the following rates:

Arable land	$1\frac{1}{4}$ artaba per aroura
Vineyard	$\frac{7}{12}$ artaba per aroura
Marsh land (or reeds)	$\frac{2}{3}$ artaba per aroura
Gardens	No tax in kind

This indicates a close adherence to the system proposed by Diocletian, namely, a uniform tax on land according to its nature. Presumably this wheat was destined for the civic annona of Constantinople. In addition, wheat, barley, wine, and meat were levied separately for the army, and if we may judge from the amount of wheat, this was a levy for the cohort of 500 Numidians (or Scythians) regularly stationed at Antaeopolis or Hermopolis, to whom Aphrodito made an annual contribution as well.

The tax in money (*largitionalia*), which was probably designed for the imperial treasury, seems to have been a tax of one and one-half carats per aroura on the arable land.³⁰ The *annonica*, amounting to slightly over 6,000 solidi, probably represent an extraordinary assessment, if we may judge from the various items under this caption. But if this was a regular tax, it would be equivalent to about four

carats per aroura. In addition, there were a number of minor taxes, the most important of which were for the local and provincial bureaucracy.

In the latter part of the sixth century the citizens of Aphroditopolis state that the tax of two carats per aroura of arable land and eight carats on vineyard had been determined by John the censitor.³¹ The pagarch Julian had raised these rates by four and twenty-three carats respectively, and now threatened to add two and one-half carats, presumably on the arable land. The fragmentary character of the document makes interpretation difficult, but apparently the villagers protested against the latest addition, which was being imposed in spite of a poor flood.

The evidence for taxation in the sixth century implies that the tax in kind was uniform on the various classes in each pagarchy. Whether the rates varied from pagarchy to pagarchy, it is impossible to say. The military annona can be attested only for Antaeopolis and Aphrodito. The tax in wheat was clearly levied for the support of the local detachment of troops stationed at Antaeopolis and was less than a sixth of an artaba per aroura. In addition to taxes in kind, there were various levies in money. The ordinary exaction for the imperial treasury (*largitionalia*) seems to have been one and one-third carats per aroura. If the assessment for the *annonica* of 6,000 *solidi* is regarded as a special nonrecurring charge, the usual tax of Antaeopolis might be estimated at a total of about two carats per aroura, while if the 6,000 *solidi* are to be included as a regular tax, the rate would be about five carats per aroura. Since the normal price of wheat in the sixth century

was about ten artabas per solidus, the total tax (including money and the civil and military annona) was approximately three and one-half artabas per aroura.

The question of the capitation tax in the sixth century remains to be examined. There is no indication of any such levy in the register of Antaeopolis, and clearly it was not exacted in that district for the year in which this register was drawn up. In the accounts of Apion there are sporadic payments *ὑπὲρ συντελείας κεφαλῆς* made by the guild of farmers, never by individuals, and usually for varying fractions of a solidus. This payment seems to have been an assessment on the whole guild for some deficiency. In a farm account at Hermopolis, kept with great care for a period of four years while the estate was being settled, there is no indication of any capitation tax either for the four sons, the slaves, or the tenants on the estate.³²

At Aphrodito the accounts of Ammonius have been preserved for four separate years. In three of the years some of the tenants made payments of one solidus (less one and one-half, two, or three carats each). This payment was made by women as well as by men, but there is no evidence of any such levy in the seventh year of the indiction. At Oxyrhynchus Stephanous had her dowry in land transferred from one tax district to another, and agreed to pay one solidus each (less charge for collection?) to the canonica and to the arcarica, apparently as an annual charge. This is the only evidence for a tax of one solidus (less collection costs) which can be found in the sixth century. The nature of the tax is nowhere

explained. Whether districts or estates which had autopragia were subjected to some special tax for tenants or landowners is unknown, but this is the nearest approach to a capitation tax on the rural population which has yet been noted.³³

Justinian preserved in his Code the law of Diocletian exempting the urban population from the capitation tax, and evidently there was no intention of repealing the law in 535. Whether Diocletian also abolished the tax on trades, which had always been exacted on a per capita basis, is unknown. There may be some truth in the tradition that Constantine reimposed the latter tax, making it a quinquennial exaction (*collatio lustralis*). This seems to have been abolished by Anastasius, but whether or not it was abolished in Egypt seems doubtful. There is as yet no clear evidence from the Byzantine period as to how the quota of tax on the various trades was determined. In the earlier period the rate varied between different trades and in different cities. Such discrimination must have had some influence on industrial development which cannot be determined from our available evidence. If Alexandrians were exempt from such taxes, it may account in part for the great industrial activity of this city.³⁴

Some levies, called *diagraphae*, were exacted at Arsinoe in the fifth and sixth centuries, and these have been explained as payments for the poll tax. This is impossible if they were paid prior to the enactment of Justinian's Code. The amounts vary considerably, and in all probability they represent payments for the tax on trades, or some special assessment may have been imposed on the urban population.³⁵

If the register of Antaeopolis was typical of the system of taxation in the sixth century, it is instructive to compare the position of an Egyptian peasant under Augustus and under Justinian. If he had a lease of five arouras of crown land in the first century, his normal rental would approximate sixteen and one-half artabas, while his various capitation taxes would be, at the least, fifty drachmae yearly. His total tax under Augustus, if expressed in terms of wheat, was equivalent to thirty-three artabas approximately. Under Justinian the owner of the same amount of land paid six and one-fourth artabas for the annona of Constantinople, and his assessment for the supplies of the local military contingent brought his total tax in kind to seven artabas (approximately). His taxes in money (*largitionalia* and assessments) normally did not exceed twelve carats, and his levy in gold for the military annona would have added a sixth, making approximately fourteen carats. At the normal price of wheat, ten artabas per solidus, this would have been equivalent to about six artabas of wheat, and his total tax would have been equivalent to thirteen artabas as compared to thirty-three artabas under Augustus.

The civil annona was probably the primary care of Diocletian, as it was of Justinian. In Egypt the tax in kind was based on the aroura, and was clearly taken as his unit for the jugatio. It would appear from the wording of Diocletian's edict that he proposed to establish a uniform rate on arable land throughout Egypt, but from scattered evidence it would seem that uniformity either was not prescribed or was soon abandoned. In the sixth century the register of Antaeopolis shows that all arable land in

the pagarchy was taxed at the same rate. The delegatio for Aphrodito indicates that in years of a good flood approximately 6,000 artabas were collected for the civic annona. The delegatio for a local contingent of troops was only 700 modii (about 225 artabas) for the year, or a little over 3.5 per cent of the civil annona. If this amount represents the average assessment for army supplies throughout Egypt, it was a minor charge. On occasion, the amount of the civil delegatio was turned over to the Church (the monastery of Metanoea), apparently in place of the annual tax, not an addition to it. Diocletian allowed a dole to Alexandria. Theodosius added 110 modii daily, which would have provided for 1,000 additional pensioners, and this rule was retained by Justinian in his Code, thus indicating a certain stability in the number on the dole. But there is very little evidence concerning the total amount or how it was apportioned. Procopius is obviously in error when he gives the dole as 2,000,000 medimni, and there is probably little truth in his statement that Hephaestus took this boon away from Alexandria and added it to the annona of Constantinople. So far as the evidence from Egypt is concerned, there is no reference to the Alexandrian annona after the fourth century.

The total assessment from Egypt prescribed by Justinian was 8,000,000 artabas. This was presumably the civil annona for Constantinople, but probably included a goodly amount for the army in Europe as well. On the assumption that the tax rate at Antaeopolis was uniform for all Egypt, the area of arable land may be estimated at 6,400,000 arouras.

This seems to be a reasonable estimate on the basis of surveys of modern Egypt before the recent developments of modern irrigation. Augustus collected 6,000,000 artabas, while the average tax per aroura was much higher. This compels a choice of two alternatives. Either the tax rate at Antaeopolis was much lower than that of other pagarchies or the area of arable land had been greatly extended by Roman engineers since the time of Augustus. As a matter of fact, the area of arable land on the upper levels of the Fayûm declined in the latter part of the third century. There seems to have been a temporary revival in the early fourth century, but later whole villages were abandoned. This loss may have been more than made up by maintaining the irrigation system in the Nile valley at a high level of efficiency, and extensive drainage operations may have reclaimed lakes and marshes in the Delta.

No estimate is possible of the revenue in money after Diocletian. The chief tax in the sixth century was imposed on land. There is some evidence that the rate of the *largitionalia* at Antaeopolis was one and one-half carats per aroura of arable land. At Aphrodito the rate was two carats, while vineyards were taxed at eight carats per aroura. Just before the Arab conquest the rate in the Fayûm was three carats per aroura of arable land. On the assumption that two carats per aroura was the average for 6,400,000 arouras, one may arrive at a rough approximation of somewhat over 500,000 solidi, after deducting costs of collection. The Arab historians put the revenue of the Byzantine rulers at 20,000,000 dinars (solidi). They further state that in the first year of

the Arab conquest the revenue dropped to 1,000,000 but two years later it rose to 12,000,000 dinars. If these figures were divided by ten they might be more credible. Thus the wheat levied by Justinian, if converted into money, would be worth 800,000 solidi. The largitionalia would normally add 500,000 solidi. The gold annona at Aphrodito was normally about a sixth of the canonica (or largitionalia), and probably all of these should be reckoned as part of the revenue sent to Constantinople. If we add the customs dues, taxes on vineyards, gardens, and trades, the revenues from imperial estates and government monopolies, it is not impossible to estimate the total income of the Byzantine rulers at 2,000,000 solidi annually.

Under the Graeco-Roman municipal systems the liturgy was a form of taxation which sometimes was very burdensome, and poorer citizens occasionally fled to escape their obligations, while those with property sometimes offered to surrender their income to their nominators and to have them undertake the liturgy in their stead. In the cities the gymnasiarchs in more prosperous days volunteered extravagant outlays for oil or for other expenses. What began as a voluntary practice degenerated into a compulsory service, and even in the first century the prefect had imposed regulations limiting the expense.³⁶ Obviously these self-imposed liturgies could have been mitigated by the same custom which had led to their development, but in liturgies imposed by the state there was no escape except by flight. In the Byzantine period most of the municipal liturgies of Greek origin disappear from the records very rapidly. The *cessio bonorum* is not recorded, and the flight from liturgies is rarely mentioned.

There was a general tendency to pay gratuities or commissions to the officials of the pagarchy or province. The *ecclicus*, *syndicus*, *logistes*, and others received some form of compensation, however meager. The collector of taxes received a commission which varied from one and one-half to two and one-half carats per *solidus* according to the nature of the tax. The village official known as *meizon* received a fee in money or in kind, and the system of fees was regularized in the sixth century by imperial legislation, so that most public officials were compensated in some degree. Few out-and-out liturgical services can be identified in the later period. The *hydrophylax*, who was charged with the duty of seeing that his village received its due share of the flood waters, held his office as a liturgy, whereas the field guards received some pay for their services. The *munera sordida*, such as the work on canals and embankments, are not mentioned in the documents as liturgies, but the lack of evidence is unfortunately not proof that the peasants were exempt.³⁷ The Arab historians speak of the *corvée* as imposed immediately after the conquest and, although their testimony is usually untrustworthy, there is a strong probability that the Arabs borrowed the system from their predecessors.

The avowed purpose of Diocletian in his legislation was to sweep away injustices and to distribute the burden of taxation equally. Hitherto the Romans had apparently followed the system of taxing land according to its productivity. In many provinces the tithing system and in Egypt itself the highly diversified rental rates on crown land show that productive capacity was the basis of the tax in kind.

Concerning the money taxes we are less well informed, but the evidence from Egypt implies that productive capacity or income was disregarded, and that a flat rate was imposed on arable land. Since the basis of the tax on trades under Constantine is unknown, it may be doubted if the tax was based on production.

The edict of Diocletian called for a census of the land and its character. The jugatio and capitatio devised for the Empire was subject to local variations. The centuria of Africa and the millena of Italy are known by name only. The Syrian version of Roman law preserves what is apparently Diocletian's system in that province, where the following units represent one iugum, each presumably paying one annona:

- 5 iugera of vineyard
- $2\frac{1}{4}$ iugera of mature olive grove
- $4\frac{1}{2}$ iugera of olives on mountainside
- 20 iugera of arable land
- 40 iugera of inferior land (e.g. mountainous)
- 60 iugera of worn-out (?) land

On pasture land the livestock paid a per capita tax of one, two, or three denarii.³⁸

In Egypt Diocletian followed established custom in using the aroura as the unit of taxation. If we may judge from the register of Antaeopolis, there were four classes of land in this pagarchy in the sixth century: arable land, vineyard, marsh or reeds, and garden. Of these, the first three paid a tax in wheat, although it is obvious that productive vineyard or marshland could not also yield wheat. There is no evidence that garden land paid a tax of any kind.

At Antaeopolis the arable land described in this register paid a tax of one and one-half carats per aroura, but no rates can be determined for the other classes. At Aphrodito, however, the arable land paid a tax of two carats, and vineyard eight carats per aroura. Here the rate of the tax in kind is unknown.

The policy of Diocletian in imposing a uniform tax on arable land no doubt led to the sweeping reforms in land tenure which we have described elsewhere. Furthermore, the privileged position enjoyed in the past by the Greek *catoeci* and presumably by Roman veterans or other landed proprietors must have been swept away.³⁹ Whether the tax based on area alone and taking no account of the productivity of the soil was more equitable than the Ptolemaic or earlier Roman practice may be questioned.⁴⁰ Although the Nile valley was probably more uniform in fertility than any other Roman province, even here there were great variations, and marginal lands under Diocletian's system tended to be abandoned. Thus the villages on the upper levels of the Fayûm oasis which had developed and prospered under the Ptolemies were finally abandoned in the fifth century. The cause may have been, in part, the failure of the irrigation system; the process was undoubtedly accelerated by the system of taxation. It would seem that in the Byzantine period there was a great extension of viticulture in Egypt. It may be that the Egyptian taste was changing from beer to wine, but whether this process was encouraged by taxation it is difficult to say. In relation to productivity vineyards were subjected to a lower rate of taxation than arable lands.⁴¹

The tax on trades has already been discussed. It would be unsafe to make inferences about the social and economic effects of this tax until more evidence is at hand. The various trades were evidently organized in guilds, and by custom membership was transmitted from father to son. The Romans used the guild organization in Egypt as a convenient unit for collecting taxes or imposing requisitions. We do not know how the various per capita rates were determined by the state; each artisan, however, in the same trade paid the same amount, with no regard to his productive capacity. Whether different rates in different communities were imposed with punitive intent is unknown; in any event, it is obvious that districts with a lower per capita rate would tend, other things being equal,⁴² to develop at the expense of less favored communities. It is uncertain whether the lay brothers in monastic institutions were exempt from the tax; if so, it was a factor which should be considered in the development of the industrial activities of the monasteries.

There is nothing to indicate that the inheritance tax was collected in the Byzantine period. A uniform tax on sales was imposed by Valentinian III over the whole Empire, but it is not mentioned in any Egyptian document. The customs dues were levied at ports of entry, apparently at a uniform rate of 12.5 per cent (*octava pars*). There was an export tax imposed on pottery (Edict XIII) to supplement the municipal revenues of Alexandria under Anastasius. This was abolished by Justinian, who claimed that the income had disappeared because of concessions and peculations, but probably the tax was suf-

ficiently high to ruin the export trade in this commodity.

The chief and steadiest source of revenue derived by Constantinople from Byzantine Egypt was the tax on land. This was a tax in money as well as in kind, and so far as we can determine, the principle of assessing the tax according to productivity was abandoned in favor of a flat rate per aroura. Thus all arable land was taxed at the same rate. Vineyards paid a somewhat higher tax in money, but apparently the difference in rate was wholly in favor of the wine grower, and vineyards developed quite extensively. As we have indicated above, the flat rate on arable land was regressive taxation, and marginal lands tended to be abandoned. While regressive taxation might tend to increase the gap between the poor farmer and the well-to-do, there is no particular evidence that many great estates developed. Since patronage was forbidden, and since the village peasant proprietor was protected by the law which forbade aliens to acquire property within the village territorium, the small proprietor was guarded in large measure. Since the peasant enjoyed a reasonably low rate of taxation in comparison with his burdens in the earlier period of foreign domination, it is our belief that the Egyptian of the Byzantine period experienced greater economic prosperity and social independence than in any other period of his history.

VI

THE ADMINISTRATION OF EGYPT

BUREAUCRACY in modern states has its parallel in the ancient world, and the growth of the civil service may be inferred from the constitutions of various emperors as well as from what is known in broad outline about the organization of the Empire. Lactantius, a Christian writer of the reign of Diocletian who was bitterly hostile to all pagan institutions, claimed that there were more people supported by taxes than there were taxpayers. When we consider the large standing army necessary to defend the boundaries and the number of officials required by the division of the Empire, the creation of prefectureships and dioceses, the subdivision of the provinces, and the separation of civil and military commands in the Byzantine period, it is clear that the army and bureaucracy were a heavy charge upon an economy which was essentially agricultural. Yet in spite of the obvious defects of bureaucracy, and in spite of a long succession of imperial constitutions in the fourth century aimed at the corrupt practices of officials, the Eastern Roman Empire continued to survive for another millennium, and its downfall can hardly be ascribed solely to bureaucratic misgovernment.

While the evidence from Egypt is eclectic, and isolated accounts or edicts regulating administrative costs do not present a complete picture, yet it is none

the less valuable, since there is as yet no other available information of like kind about this period.

The most important administrative unit in Byzantine Egypt was the village. These small settlements were responsible for the cultivation of the land attached to them (*horiodeictia*, *territorium*), and also for the taxes and requisitions imposed upon them. The village was regarded as possessing this land, and the individual villager also had the same right. Not only did he cling tenaciously to this possession, but he was protected in some degree by a law which forbade aliens to acquire land within the territory of the village.¹

In the regulation of internal affairs the village had its own government. Headed by the *comarch* and assisted by the village secretary, the council of village elders managed local affairs with little interference from above. In the sixth century the chief official was the *meizon* (or *meizoteros*), and the council of elders was replaced by the *possessores* and *proto-cometae*.²

In the fourth century few villages kept an account of income and expenses. The income was derived chiefly from assessments upon the members of the community and from rents of village property. This income was disbursed largely in the payment of annual taxes and of requisitions. Apparently the accounts were submitted to the inspection of an auditor (*logistes*), who exercised some supervision over the *nome*. From the sixth century the accounts of the village of Aphrodito have been preserved in part, and give some idea of village life in that period. Aphrodito had once been a city, but the vicissitudes of

fortune had reduced it to the status of a village in the pagarchy of Antaeopolis. In some way it had won the favor of the empress Theodora, and had received the privilege of collecting its own taxes (*autopragia*). This grant may have carried with it the requirement that the village itself keep an annual record of accounts for imperial inspection. Whatever the reason may have been, these records were kept in some detail, and a few have been preserved.³ Although ancient bookkeeping was not always as clear as one could wish, the budget of certain years may be summarized as follows (omitting carats and fractions):

<i>Year</i>	<i>12</i>	<i>13</i>	<i>14</i>	<i>1</i>	<i>9</i>
Receipts	584	569	539 ?	532	[—]
Expenses	590	566	538 ?	535	[—]
<i>Canonica</i>	402	403	403	257	397
<i>Annonae</i>	65	73	53	104	64
Fees, etc.	[—]	61	[—]	69	42

These figures show that there was an attempt to strike a balance each year. The taxes known as the *canonica* covered the annual contribution to Constantinople. They were usually paid in three installments, and the amount did not vary much from year to year. The *annonae*, also paid in three installments, were sometimes forwarded to the provincial treasurer, but were more often sent directly to an officer of the troops stationed at Antaeopolis, Antinopolis, or Hermopolis. In the latter case the payments were made pursuant to an order (*πρόσταγμα*), probably issued on the authority of the *dux* through the *actuarius* of the troops, and the amounts vary materially in each installment. The low rate of the

canonica and the heavy assessment for the annona in year 1 were probably due to some unusual military expense, perhaps in connection with a raid by the Blemmyes. The recipients of fees varied from year to year, and this portion of the records is least satisfactorily preserved. It is readily seen that, after the canonica and annonae had been paid, there was a very considerable balance, which is seldom accounted for. Some miscellaneous items in the expense account provided for the purchase of wine, fowl, eggs, cheese, oil, etc., probably for the entertainment of guests. Six solidi were once spent on a visit from the provincial governor. So far as can be determined, nothing was spent on the village itself. Deficiencies in the budget were once paid off by the protocometes, but there is some evidence that he was repaid in the following year.⁴

The taxes in kind varied more than we should expect if a fixed rate was imposed on all arable land as at Antaeopolis. Thus in four different years Aphrodito delivered wheat for the imperial needs in the following amounts: 4,880, 5,759, 6,053, 6,100 artabas. In two successive years 5,759 artabas were sent to the monastery of Metanoea,⁵ seemingly in lieu of the tax to Constantinople; probably a special order was issued to this effect by the emperor. The troops also received various supplies in kind. The numeri at Antaeopolis received 203 artabas for a trimester. The Numidians at Hermopolis were paid about the same amount for a yearly assessment. In addition, pickled meat, barley or chaff, wine, and oil were requisitioned in varying amounts. The troops received regular rations (annonae and capita)

and, in addition, as the accounts of Aphrodito show, certain amounts in gold, but whether the soldier had a regular stipend in money and, if so, how much, cannot be determined.⁶

One of the administrative innovations of the Byzantine period was the introduction of the pagus. As the word implies, this is a borrowing from the Latin West. Each nome was divided into pagi, and over each a member of the local senate was appointed as praepositus. The pagus included a number of villages, and the praepositus exercised considerable power in their administration. He was responsible for the cultivation of abandoned land, for making various assessments, for collecting taxes, and at times he had judicial functions. Nothing is heard of the pagus after the fourth century; by the sixth the pagarchy had replaced the nome, and the pagarch was the chief administrative official.⁷

The tax register of Antaeopolis sets forth the amount of taxes in money and in kind collected from the pagarchy.⁸ The largest sum went to supply the army, perhaps owing to some unusual local emergency. The canonica sent to Constantinople were next in importance. The gratuities (*συνήθειαι*) to various officials and government bureaus amounted to 340 solidi, while for the expenses of the pagarchy 302 solidi were provided. A document from Oxyrhynchus, which is perhaps somewhat later, contains an appropriation of 300 solidi which may have been for the same purpose.⁹

The city in Byzantine Egypt is relatively unimportant. In origin the city grew up around the temple and became the administrative center of the nome.

This was its chief importance under the Ptolemies, and the Greek element in the community introduced some of their Hellenic institutions. Under Septimius Severus the nome capital was given a senate, but there is no clear proof that the metropolis became a Greek city of the Western type with the nome as its territorium, or that the municipal senate was responsible for the tribute.¹⁰ While the rest of the Empire was afflicted by civil war, famine, and plague, Egypt as a whole was little touched by these disorders, and the evidence furnished by the papyri shows that Hermopolis was spending great sums on public works and in providing generous grants to athletic victors. Antinoopolis likewise spent large sums in local water-works, and somewhat later in the third century Oxyrhynchus had considerable revenue at its disposal for public works.¹¹

We are fortunate in having some tattered fragments of the minutes of the municipal senate at Oxyrhynchus in the last quarter of the third century.¹² While they present a vivid picture of the civic life, there are indications that conditions were far from ideal. The Greeks had always enjoyed a privileged position in the community. If they owned land, their tax in kind was very much less than the rentals demanded from crown land or imperial estates. They also paid a lower rate of capitation tax. Thus when they introduced their native institutions and voluntarily undertook the necessary liturgies for their support, they set a standard of extravagance which was borne willingly in prosperous years. In the second century the prefect had placed a limit on these expenditures at Hermopolis.¹³ Occasionally we find

some nominees ready to surrender their property rather than undertake the obligations, but this was exceptional.¹⁴ More often we hear of the flight of individuals to escape their obligations; in these cases, however, it is doubtful if they left much real property behind them. The minutes of the council are chiefly concerned with finding candidates for the liturgies. Curiously enough, so strong was the power of custom that the senators never thought of reducing these expenses, which they had themselves imposed.

When Diocletian abolished the capitation tax imposed on the urban plebs throughout the Eastern diocese there arose certain problems which demand consideration. Since his budget must have increased with the new administrative machinery, it is surprising that he voluntarily eliminated a profitable source of revenue. Was this legislation designed to foster the development of the urban community at the expense of the more heavily taxed rural districts? If so, we should have expected that this legislation would be first applied in the Western provinces, where the villa was developing at the expense of the city.

In Egypt the new system of taxation destroyed the privileged position of the Greeks and of other favored classes. With the same tax on land paid by Egyptian, Greek, or Roman resident in Egypt and with the loss of their privileged position in respect to the capitation tax, it is somewhat surprising to observe how rapidly Greek institutions disappeared. The ephebic system and the gymnasium cannot be traced beyond the first quarter of the fourth century, and most of the other institutions characteristic of

the Graeco-Roman city-state declined or disappeared. Some of those institutions, which involved pagan practices repugnant to Christianity, owed their suppression to the impact of the new religion, but in general it may be said that Hellenism, no longer able to maintain itself in splendid isolation, began to merge with the native Coptic culture. George of Cyprus, writing at the beginning of the seventh century, knew the cities of the Nile valley as seats of Christian bishoprics. While it might be tempting to infer that many cities which began as temple states thus completed their life history, it would be only a half-truth. It is true that the papyri furnish practically no evidence of Egyptian cities after the fourth century, but from Arab history we know that many important industrial communities continued to preserve their identity long after the conquest.

Something must be said of Alexandria, which from its foundation had been predominantly Greek. It stood in a peculiar relation to the rest of the realm of the Ptolemies, and was often called "*Alexandria ad Aegyptum*," as if it were not an integral part of the kingdom, although its administrative center. It rapidly developed as a great commercial city, and when Egypt became a part of the Roman Empire, the Alexandrian market was widely extended. With the opening of the sea route to India, the Alexandrians were quick to develop this trade to their own advantage. Besides selling staple commodities, such as wheat, linen, glass, and papyrus, Alexandria was the center of a great trade in luxury products. Spices, perfumes, drugs, rare dyes, fancy weaves of silk and linen, jewelry, and other products were pre-

pared for Mediterranean markets. The letter attributed to Hadrian, quoted by the biographer of Saturninus, is probably a forgery, but the picture of industrial activity in Alexandria is undoubtedly true. In the third century the general economic distress in Europe must have affected the market for luxury products, and the industrial activity of the city suffered. Eusebius speaks of the plague which carried off great numbers of the citizens about the middle of the century.¹⁵ The direct route to India was hampered by the rise of new powers in South Arabia and in the kingdom of the Axumites. The rise of Palmyra seems to be due in part to the diversion of the Indian trade through the Persian Gulf, where the Saraceni were in control of the caravan trade. Their trade with Palmyra and Petra led to the development of Antioch at the expense of Alexandria.

Alexandrian industry had been geared to the Western markets rather than to the local demand. The Egyptian peasant did not indulge in luxuries, and his simple wants were supplied locally. For the most part the country was prosperous, since its chief product was always in demand, and prices for the wheat were steadily advancing. There was no pillaging of the country by marching troops, and except for an occasional raid by desert tribes the people were untouched by war. If there was any tendency to throw off the power of Rome, it was limited entirely to industrial centers.

After the death of Valerian, Macrianus and Quietus were recognized in Alexandria, probably owing to the accident of propinquity more than anything else. Their coinage was grudgingly accepted at Oxyrhyn-

thus.¹⁶ Their rule, however, lasted for only a short time. When Macrianus was defeated in Thrace, Gallienus seems to have regained control of Egypt without a struggle. The status of Aemilianus as one of the "Thirty Tyrants" is not clear. Milne suggests with considerable plausibility that he was appointed prefect by Gallienus and may have been engaged in protecting the southern part of the province when Timagenes brought in the Palmyrene forces of Zenobia.¹⁷ Aemilianus certainly issued no coinage. The story that he was preparing a campaign against the Indies and was put to death by Theodotus on the order of Gallienus seems as baseless as the farcical account of his assumption of the imperial purple.¹⁸

The invasion of Egypt by the forces of Palmyra, evidently invited to Alexandria by a Palmyrene faction in the city, is a curious interlude. The claim that there were close commercial relations between these cities seems to contradict common sense. If Palmyra prospered, her caravan trade flowed naturally to the nearest Syrian ports, and Alexandria was far off the main stream. One can readily see why Palmyra should like to control Alexandria, for thus her monopoly of the Eastern trade routes would be complete. But the Palmyrene monopoly could in no way benefit Alexandria. The uneasy relations of Rome and Palmyra from the invasion of Egypt by the forces of Zenobia to the overthrow of Vaballathus by Aurelian need not be traced in detail.¹⁹ Whether or not the invasion was wholly welcome is unknown. This much is clear. There was a pro-Palmyrene party in Alexandria, and presumably Vaballathus

counted on their support when he declared himself independent of Rome. But this support must have been half-hearted, for Vaballathus was defeated with very little effort.

Firmus, a wealthy merchant prince, appears on the scene after the destruction of Palmyra. His biographer states that he was a friend and ally of Zenobia, and maintained friendly relations with the Saraceni. Evidently the remnants of the Palmyrene party in Alexandria supported him. If Aurelian had already imposed his tax on linen, glass, and papyrus, the industrialists concerned with their manufacture may also have supported Firmus, who was deeply involved in the paper industry. Possibly the Alexandrians gave him their aid in the hope that, after Palmyra was destroyed, he might induce his Saracenic friends to bring their caravans to Alexandria by way of Petra. His biographer records the fact that there was considerable doubt in antiquity whether he had ever proclaimed himself emperor. No coins were issued by him, his rule was brief, and it received very little support from the mass of the Alexandrians.

The destruction of Palmyra must have led to the reorganization of trade routes, but the immediate repercussions of that reorganization are obscure. The chief benefactor appears to be Persia, which soon became an active threat to Rome. The Saraceni may have used Petra as an alternate route to that of the Mesopotamian valley, and the development of the Homeritic and Axumite kingdoms may have been owing to the diversion of trade to the Red Sea route. Egypt remained at peace after the overthrow

of Firmus, but in 296 the revolt of Domitius involved the greater part of Egypt, and this proved the most widespread revolutionary movement in the history of Roman occupation.

The publication of the letters of Paniscus has cleared up the details of the revolt under Domitius Domitianus.²⁰ Hitherto it has been assumed that a revolt had broken out early in the reign of Diocletian at Coptos and Busiris. As a result, both cities were destroyed. A later revolt, under the leadership of Domitius or Achilleus, was centered in Alexandria. The letters of Paniscus show that Coptos was still standing under Domitius and was preparing for active fighting, and the two revolts must be considered part of one and the same movement. Since the coinage of Diocletian at Alexandria ceased in his twelfth year, and since none of the coins of Domitius were issued in his first year, it seems safe to conclude that the latter did not have control of the mint in time to issue coins of his first year. His assumption of imperial power may have come earlier in 296, but he did not control the Alexandrian mint before the middle or the end of August. Since the edict of Diocletian was issued in March, 297, it is clear that the war was finished sometime before that date.²¹

The causes of this uprising can only be conjectured. The centers of revolt were Coptos, Busiris, and Alexandria. Coptos was the head of the caravan route to Myos Hormos, and its prosperity depended largely on this trade. Whether the Red Sea route had recently been blocked for Greek traders is unknown; if so, the blockade may have accounted for discontent in that city. Busiris is said by Zonaras

to be near Thebes. Both Busiris and Coptos were destroyed, although a new terminus for the caravan route was founded at Maximianopolis, a few miles north of Coptos. The resistance of Alexandria was stoutly maintained and, according to Eutropius, lasted nearly eight months. According to one account, the city did not surrender until the water supply was cut off, and the anger of Diocletian was sated only by wholesale massacre and proscriptions. Seston finds the explanation of the revolt in the edicts published at Alexandria after the capture of the city. One of them dealt with the proscription of the Manichaeans, a second forbade the practice of alchemy, and the third promulgated Diocletian's reform of taxation.²² While some consideration of these edicts is important, it may be questioned whether they were real factors in the revolution. The reform in taxation was not limited to Egypt but applied to the whole Empire. It may be questioned whether taxation was a factor in Alexandria, which seems to have been exempt, except for the taxes in kind imposed by Aurelian. The bitter resistance of the city implies some deep-seated discontent. That this was due to economic factors and unemployment is shown by the fact that a few years later (302) Diocletian granted a dole to feed the poor of the city. It is not impossible that the loss of trade connections with the East had vitally affected the caravan trade of Coptos and the luxury trade of Alexandria as well. Whether Domitius, or Achilleus, as he is called in the literary sources, could have remedied the situation is unknown, but when people are

starving they are not disposed to be too critical of promises of relief.

If we may believe Procopius, the Alexandrian dole was continued until it was abolished by Hephaestus under Justinian.²³ Constantine negotiated treaties with the Homeritae of Arabia and the Axumites of Abyssinia, but apparently his efforts brought no improvement to Alexandrian industries. An assessment at Oxyrhynchus for the support of sailors on the Red Sea in 359 implies some effort to protect the commerce with India; whether or not the attempt was successful is unknown.²⁴ Theodosius increased the dole to Alexandria to provide for an extra thousand on the list of recipients; about the same time he released the city guilds from the liturgy of cleaning the aqueducts which supplied the city with water.

Unfortunately the history of Alexandria in the Byzantine period is known largely through the ecclesiastical writers, whose interest is chiefly in doctrinal disputes. Their picture of the quarrels of the various Christian factions, not only among themselves, but also with their pagan fellow citizens, and the deep cleavage between Church and State shows that life at Alexandria, even if dangerously exciting, was far from secure. The expulsion of the Jews by the fanatic Cyril must have dealt a serious blow to capital investment in industry, and it is probable that Alexandria never recovered. There is no mention of its industrial importance at the time of its capture by the Arabs, and when Cairo was made the new capital of the Arab ruler, Alexandria speedily declined to insignificance.

One of the curious survivals from the sixth century is the city budget of Alexandria preserved in Edict XIII:

Public baths	492 solidi
Anticantharus	418 solidi
Transport of grain	558½ solidi
Horse racing	420 solidi

The interesting feature of this budget is that the local officials had no hand in it. It was prepared by an imperial official, the vindex, and it was later approved by the emperor, who transmitted it to the Augustalis to put into effect. Moreover, the city evidently had no income of its own and no authority to impose taxes. Hitherto the members of the local senate had been required to contribute 100 solidi to the horse racing, and the Augustalis gave 320 solidi for the purchase of the thirty-six horses used in the racing. The balance had been raised by an export tax on tiles or pottery and other unspecified commodities, but this source of revenue had failed. Justinian instituted a new source of revenue which provided the entire sum of 1,888½ solidi; the schedule, however, which was attached to the edict, has not been preserved. Under the new arrangement the senators were released from their obligation to make an annual contribution, and the Augustalis was empowered, according to custom, to withdraw 320 solidi from the tax fund to purchase the horses, ostensibly in his name.

Some provisions in this ancient municipal budget seem surprising. The most important item, namely, for the transport of grain, was obviously the annona

for the city poor. Interest in horse racing was apparently countenanced by the fanatic Christians, who frowned upon most sports as survivals of paganism. At least, hippodromes existed in many Egyptian cities, although we have no record of how they were maintained. The meaning of *anticantharus* is unknown. It has been suggested that it was another bath opposite the building called, in popular parlance, *Cantharus* or "Beetle." It seems unlikely, however, that the appropriation for baths was entered under separate headings, or that nearly half the annual budget was devoted to that purpose. No mention is made of the museum or the great library, the Pharos, police protection, lighting, water supply, gymnasia, or other institutions dear to the ancient Greek.

Since the dole was provided by imperial generosity from the time of Diocletian, it would appear that Alexandria had no income of its own. All endowments had doubtless already disappeared, and if the city had any territorium before the revolt of Domitius, it was probably confiscated by Diocletian. As a matter of fact, there is very little evidence for any municipal territory in Byzantine Egypt.²⁵ Whether or not the senators of Alexandria or of other cities had contributed to municipal expenses is uncertain. The only evidence that can be cited is Justinian's edict, which shows that it had once been customary for the senators to contribute a small amount for the horse races. It is likely that there was some income from the public baths, but the small fee from bathers could hardly provide maintenance.

The city had been the administrative center of the ancient nome. By the creation of the pagus the center of gravity had been shifted to the administrator of the pagus. What happened in the dark age of the fifth century is quite unknown, but by the sixth century the pagus had disappeared, and in some way the nome had become a pagarchy, whose chief official was chosen from wealthy citizens, as Apion at Oxyrhynchus and Patricia at Antaeopolis. It is probable that the pagarch held office as a personal liturgy and received no salary. In his preface to Edict XIII Justinian includes the pagarchs as corrupt officials who shared in the guilt of appropriating most of the public revenues before they ever reached the imperial coffers.

The tax register of Antaeopolis, which has been described elsewhere, gives a detailed account of the annual taxes.²⁶ In the summary of totals the expenses of the pagarchy are given as 302 solidi. A similar sum is found in an account of Oxyrhynchus which may be contemporary, but whether this was a fixed amount prescribed by law cannot be certain. Aphrodito provided fees for various officials and for others whose functions are not described. It seems impossible with the evidence at hand to determine whether these payments were made to imperial, provincial, or local officials.

In addition to 302 solidi for the pagarchy, the Antaeopolis register has an entry of 339 solidi for fees (*συνήθειαι*). Owing to the poor state of preservation of the preceding columns it is not possible to determine how this total was arrived at; apparently the fees went to various bureaus of the civil and

military authorities whose representatives were to be found in the individual pagarchies, and to other provincial officials who appeared there from time to time.

The administrative unit above the pagarchy was the province or eparchy. The reorganization of Diocletian made three provinces out of Egypt. Augustamnica was created about the middle of the fourth century. About 381 Egypt became a separate diocese, to which Libya was added, with the praefectus Augustalis in supreme civil command.²⁷ The military command was divided between the comes Aegypti and the dux, who commanded the forces of the Thebaid and of Libya. In his Eighth Novel Justinian gives the provinces as Augustamnica I and II, Egypt I and II, and Upper Libya. No mention is made in this novel of Lower Libya, Arcadia, or Thebaid I and II, and it would appear that they were omitted through oversight. When this further subdivision of the provinces took place is unknown. In Edict XIII Justinian made the Augustalis the civil and military governor of Alexandria, Aegyptia I, and Aegyptia II (excepting certain parts which were transferred to Libya). The provinces of Upper Egypt (Thebaid I and II) were brought under the general command of the dux of the Thebaid, with the civil governors under his control. It is probable that Upper and Lower Libya were combined under the dux of Libya, with a civil governor (praeses) under him for each of the former provinces. Nothing is said in this edict of Augustamnica I and II or of Arcadia, but their administration may have been discussed in the lost portion. The diocese of Egypt

was abolished, and the Augustalis and duces were brought under the direct supervision of the pretorian prefect of the Orient. Apparently some modifications of the arrangement in the Eighth Novel were effected, though the nine provinces still remained. The salary of the civil governor is unknown, but after the reorganization of Africa in 535 the salary of the consularis was set at 488 solidi, and that of his staff at 160 solidi.²⁸ In the Eighth Novel the civil governor of Augustamnica I was of consular rank and presumably received a similar salary; Augustamnica II, Aegyptus I and II, and Upper Libya are somewhat inferior. In the same novel he provided that no official should pay a fee for securing any office, and he set forth what was apparently the scale of appropriations allowed to individual governors for their staff as follows:

	I	II
Three chartularii of the Sacred Cubiculum..	9	9
Primicerius of the tribuni notarii.....	24	15
Adjutant of primicerius.....	3	3
The bureau of the governors.....	40	36

Under the first group is the consular province Augustamnica I. In the second group are listed Augustamnica II, Aegyptia I and II, and Upper Libya (under praesides or correctores). Lower Libya, Arcadia, and the two Thebais are not mentioned, but from Edict XIII it is evident that the Thebais were under praesides.

Under the reorganization effected through Edict XIII the praefectus Augustalis was given the civil and military command of Aegyptia I, II (except for a portion assigned to Libya), and Alexandria. The

governors of the separate provinces retained their office subject to his orders. The salary of the Augustalis was fixed at 2,880 solidi, which was said to be a considerable increase over his former stipend, which had been fifty annonae and fifty capita, with the usual gratuities and New Year's gifts (*calandica*). The appropriation for his assessors (legal advisors) was 360 solidi and for his bureau of 600, which now combined both civil and military departments, 1,000 solidi were allowed. The number of his assessors is unknown; if the clerks in the bureau received an equal share of the appropriation allotted to it, they were singularly ill paid.

Upper and Lower Libya were combined under the military command of a dux, and each of these provinces had a civil governor (*praeses*) subordinate to him. According to Justinian, his salary had been ninety annonae and 120 capita, which he commuted for 1,005 $\frac{1}{4}$ solidi. It is not clear why the salary of the dux should be higher than that of the Augustalis when they were paid in kind, while under the new scale the dux fared much worse. There is, however, mention of fifty annonae and fifty capita in gold now commuted to a payment of 360 solidi. If this was also part of the ducal salary, he still received less than half that of the Augustalis. It seems more likely that these fifty rations were the allotments for the ducal bureau which Anastasius seems to have set at forty members.²⁹ The scale of salaries fixed for the Augustalis of Egypt and the military commander of Libya need not be taken as the norm for other provinces. In both these provinces the dux and Augustalis had both civil and military duties,

and the latter was responsible for the collection of the imperial annona from all Egypt.

The portion of Edict XIII dealing with the minor officials of Libya is not preserved. Anastasius, however, sets a limit of forty members for the military bureau, each member receiving one ration of food for himself and one for his mount. Somewhat more interesting, however, is the limit that he set upon the gratuities which the ducal staff and clerks could exact annually from the soldiers. The amounts are as follows: assessor, 154 solidi; domesticus, 126 solidi; chancellor, 24; other minor officials in all, 180; the New Year's gifts (*calandica*) for the clerks in the bureau, 161 solidi. It is clear that the ill-paid bureaucracy supplemented its stipend by the exaction of gratuities which were, perhaps, freewill offerings at first, but had become a heavy tax by the beginning of the sixth century. So far as known, Anastasius was the first to attempt to regulate the amounts and to establish a scale for various ranks in the civil and military service.

There is little evidence about the size of the army in Byzantine Egypt. Maspero is undoubtedly correct in the assumption that it was small.³⁰ A detachment of *Transtigritani* was unable to cope with a private force of *buccellarii* maintained by a landed proprietor in the Fayûm. Detachments of *numeri*, usually 500 in number, were stationed at Hermopolis, Antinoopolis, and Antaeopolis at various times during the sixth century. Although they were called *Numidians*, they were probably recruited locally, and in this period military service was performed as a hereditary duty, or else barbarians were hired in

bands by the state or even by private individuals. Apion of Oxyrhynchus had Goths in his service. The numeri served more as a local police force than as a coördinated army, and there was no real defense of Egypt when the Persian and Arab conquerors entered the land.

The soldiers of the sixth century were supplied with wheat, wine, oil, meat, and fuel. These rations varied according to rank. There were also payments of money, although nothing is known of the stipend of the individual soldier. The accounts of Aphrodito cited above show that the village paid approximately one ninth of its taxes to the actuarii of the troops, usually about 65 solidi a year. From the tax register of Antaeopolis we learn that extraordinary levies, presumably to meet the expenses of a special expeditionary force, were made in that year. African troops (*Bis electi*) were brought in, and they were assisted by cavalry (*Sussitiani* and *Philitiani*).³¹ These troops seem to have been withdrawn when their special task was completed, for there is no other reference to them. Any attempt to reckon the cost of the Egyptian troops is at present impossible.

The civil administration of Egypt under Justinian may be estimated by using the evidence of Edict XIII and the Eighth Novel as follows: Augustalis (Aegyptia I, II, and Alexandria), 2,880 solidi; his assessors and bureau, 1,360 solidi; eight praesides or correctores (estimated salary 400 solidi each), one consular at 448 solidi; staff officers and bureaus for the nine provinces, 450 solidi. This gives an estimated total of 8,738 solidi.

There is less certainty about the cost of the military administration. If the dux of the combined Libyan provinces received 1,000 solidi and his bureau had an appropriation of 360 solidi by Edict XIII, it is probably safe to assume that the military administration of the Thebaid (exclusive of the cost of maintaining the troops) required a minimum of 1,200 solidi annually.

It is uncertain whether the pagarch held his office as a liturgy or as a salaried official. Apparently the local bureaus at Antaeopolis and at Oxyrhynchus had an annual appropriation of 300 solidi. The tax register of the former city shows that 339 solidi were collected for gratuities paid to various officials, but the distribution of this sum among the civil, military, and local authorities cannot be determined.

The salaries of the civil and military officials of the nine provinces into which Egypt was divided under Justinian and the appropriation for the various bureaus attached to these provinces may be estimated at 10,000 solidi a year. At that time the purchasing power of this amount was 100,000 artabas of wheat. If we compare this with the cost of administration under Augustus some interesting facts emerge. An Augustan prefect had the civil and military administration of the entire province in his own hands. His salary was 300,000 sesterces a year, and under Augustus this had a purchasing power of approximately 100,000 artabas of wheat. In addition to the prefect, however, the province had other highly paid officials; the idiologus received 200,000 sesterces, and Lucian relates that he had served as secretary to the prefect at no mean salary. We must also con-

sider the cost of the elaborate bureaucracy inherited from the Ptolemies and apparently maintained by the Romans at Alexandria until the time of Diocletian. From all this the conclusion is obvious that the cost of governing Egypt under Augustus was very much greater than under Justinian. To be sure, the purchasing power of money declined steadily under inflation, and ultimately payments in money were replaced by payments in kind. But if the *annonae* and *capita* of a governor were the same as those of soldiers, the fifty *annonae* and *capita* paid to the *Augustalis* prior to Justinian's order to pay him in gold could hardly exceed 400 *solidi* in value.³²

Justinian merged the civil and military bureaus at Alexandria under the *Augustalis*. The number of clerks was now limited to 600, and the appropriation for their support was 1,000 *solidi* yearly. Apparently the *annonae* and *capita*, or rations in kind, were discontinued and the clerks were paid in gold. Even if this amount was distributed equally among the 600 clerks, which was evidently not the case, the average stipend would have been sufficient to purchase thirteen *artabas* of wheat. The ordinary allowance of a slave was twelve *artabas*, and he usually received in addition an allowance for clothing, doles of wine and oil on occasion, as well as shelter, from his master. Obviously the clerks in the official bureaus were worse off than private slaves, and it is small wonder that the officials of the Empire had an itching palm when the state did not pay them a living wage.

This summary of the cost of bureaucracy in Egypt, although imperfect and incomplete, yet af-

fords clear proof that it was no great burden and that the administrative machinery created by Diocletian was even less a burden than that of the early Empire. Although offices were multiplied, the powers of the new officials were greatly restricted and their rewards decreased. Under these conditions capable men were not attracted to the civil service, and, with low salaries, graft and corrupt practices became widespread. The clerks in the bureaus either were slaves or were treated worse than slaves, and many of them were compelled to supplement their dole to eke out a bare subsistence. The weakness of the Byzantine Empire lay, not in a top-heavy bureaucracy, but in a civil service which was ill paid and often corrupt. On the other hand, wealthy Greek and Roman families had a long tradition of public service, and doubtless many of the higher officials of the Empire were still recruited from this class. The strength of this Empire rested on a system of taxation which spread the burden with reasonable equity over all classes; where, in theory at least, Roman, Greek, and peasant were on equal footing so far as taxation was concerned; in Egypt, and possibly in other Eastern provinces as well, the peasant enjoyed greater liberty and greater prosperity than ever before.

LIST OF ABBREVIATIONS

(This list contains the abbreviations used
for works frequently cited.)

- BGU. = *Aegyptische Urkunden aus den koeniglichen Museen zu Berlin*. Berlin, 1895—.
- CIG. = *Corpus Inscriptionum Graecarum*, by A. Boeckh and others. Berlin, 1828-77.
- CIL. = *Corpus Inscriptionum Latinarum*. Berlin, 1863—.
- Cod. Just. = *Corpus iuris civilis*: Vol. II, *Codex Justinianus*, by P. Krueger. Berlin, 1906.
- Cod. Theod. = *Codex Theodosianus*, by T. Mommsen and P. M. Meyer. Berlin, 1905.
- CPR. = *Corpus Papyrorum Raineri*, Vol. I, by C. Wessely. Vienna, 1895.
- Currency = *Currency in Rome and Byzantine Egypt*, by L. C. West and A. C. Johnson. Princeton, 1944.
- Econ. Studies = *Byzantine Egypt: Economic Studies*, by A. C. Johnson and L. C. West. Princeton, 1949.
- O. Fay. = *Fayûm Towns and Their Papyri* (p. 317), by B. P. Grenfell, A. S. Hunt, and D. Hogarth. London, 1900.
- O. Mich. = *Greek Ostraca in the University of Michigan Collection*, by L. Amunsden. Ann Arbor, 1935.
- O. Oslo. = *Ostraca Osloënsia* (Avhandlingar Utgitt av Det Norske Videnskaps-Akademi i Oslo, Vol. II, Hist.-filos. Klasse 1933, No. 2), by L. Amunsden. Oslo, 1933.
- P. Achmîm = *Les Papyrus grecs d'Achmîm* (Bulletin del'Institut français d'Archéologie Orientale, xxxi, 1930), by Paul Collart. Cairo, 1930.
- P. Amh. = *The Amherst Papyri* . . . , Vol. II, by B. P. Grenfell and A. S. Hunt. London, 1901.

- P. Bad. = *Veröffentlichen aus den badischen Papyrus-Sammlung*, by W. Spiegelberg, F. Bilabel, and others. Heidelberg, 1923—.
- P. Brem. = *Die Bremer Papyri* (Abh. der Preussischen Akademie der Wissenschaften, Phil.-hist. Klasse, Nr. 2), by U. Wilcken. Berlin, 1936.
- P. Cairo = *Catalogue général des Antiquités du Musée du Caire: Papyrus grecs d'époque byzantine*, by J. Maspero. Cairo, 1911—.
- P. Cairo Pr. = *Griechische Urkunden des ägyptischen Museums zu Cairo*, by F. Preisigke. Strassburg, 1911.
- P. Flor. = *Papiri greco-egizii pubblicati dalla R. Accademia de Lincei*, by D. Comparetti and G. Vitelli. Milan, 1905-15.
- P. Giss. = *Griechische Papyri im Museum des Oberhessischen Geschichtsverein zu Giessen*, by O. Eger, E. Kornemann and P. M. Meyer. Leipzig, 1910-12.
- P. Leipz. = *Griechische Urkunden der Papyrussammlung zu Leipzig*, by L. Mitteis. Leipzig, 1906.
- P. Lond. = *Greek Papyri in the British Museum*, by F. G. Kenyon and H. I. Bell. London, 1893—.
- P. Mich. = *Michigan Papyri*, by C. C. Edgar, A. E. R. Boak and others. Ann Arbor, 1931—.
- P. Oslo. = *Papyri Osloenses*, by S. Eitrem and L. Amunsden. Oslo, 1925—.
- P. Oxy. = *The Oxyrhynchus Papyri*, by B. P. Grenfell, A. S. Hunt, and others. London, 1898—.
- P. Ross.-Georg. = *Papyri Russischer und Georgischer Sammlungen*, by G. Zereteli, O. Kruger, and P. Jernstedt. Tiflis, 1925—.
- P. Strassb. = *Griechische Papyrus der kaiserlichen Universitäts- und Landesbibliothek zu Strassburg*, by F. Preisigke. Strassburg, 1912-20.
- P. Thead. = *Papyrus de Théadelphia*, by P. Jouguet. Paris, 1911.

- P. Würzb. = *Mitteilungen aus der würzburger Papyrussammlung* (Abh. der Preussischen Akademie der Wissenschaften, 1933, Phil.-hist. Klasse, Nr. 6), by U. Wilcken. Berlin, 1934.
- Rom. Egypt = *An Economic Survey of Ancient Rome*, by Tenney Frank: Vol. II, Roman Egypt, by A. C. Johnson. Baltimore, 1936.
- Sammelbuch = *Sammelbuch griechischer Urkunden aus Aegypten*, by F. Preisigke and F. Bilabel. Strassburg, Berlin, Leipzig, Heidelberg, 1915—.
- SIG. = *Sylloge Inscriptionum Graecarum*, by W. Dittenberger. Leipzig, 1915-24.
- Wallace = *Taxation in Egypt from Augustus to Diocletian*, by S. L. Wallace. Princeton, 1938.
- Wilcken, *Grundzüge, Chrest.* = *Grundzüge und Chrestomathie der Papyruskunde*. Erster Hälfte: *Grundzüge*. Zweite Hälfte: *Chrestomathie*, by L. Mitteis and U. Wilcken. Leipzig and Berlin, 1912.

NOTES

LECTURE I

¹ A good summary of early coinage is found in A. R. Burns, *Money and Monetary Policy in Early Times* (London, 1927).

² Pseudo-Aristotle, *Economica*, ii. 1348-50; G. Mickwitz, *Geld und Wirtschaft im röm. Reich des IV. Jahr. n. Chr.* (Helsingfors, 1932), 22.

³ *Frogs* 730.

⁴ Michell, "The Iron Money of Sparta," *The Phoenix*, ii (1947), 42; for the early history of Roman coinage see H. Mattingly, *Journ. Rom. Studies*, xxxv (1947), 65.

⁵ Burns, *op. cit.*, 262, 284.

⁶ R. S. Poole (*Catalogue of Coins in the Brit. Mus., Alexandria* [London, 1892], p. xxviii) says that the silver issues of Auletes and Cleopatra were like the Roman issues from the Alexandrian mint. No analyses of the Ptolemaic billon seem to be available. For the history of Ptolemaic monetary policy see F. Heichelheim, *Wirtschaftliche Schwankungen der Zeit von Alexander bis Augustus: Beiträge zur Erforschung der wirtschaftlichen Wechsellagen* (Jena, 1930), and C. Préaux, *L'économie royale des Lagides* (Bruxelles, 1939), 269 ff.

⁷ Cassius Dio li. 17; T. Frank estimated the plunder at about 250,000,000 denarii, *Journ. Rom. Studies*, xxiii (1933), 143.

⁸ L. C. West, *Numismatic Notes and Monographs*, xciv (1941), 34 f.

⁹ L. C. West and A. C. Johnson, *Currency in Roman and Byzantine Egypt* (Princeton, 1944), Chaps. i-ii. (This is hereafter cited as *Currency*.)

¹⁰ For a convenient summary of the analyses of Roman denarii and Egyptian tetradrachms see Mickwitz, *op. cit.*, 38-57, reproduced in A. C. Johnson, *Roman Egypt to the Reign of Diocletian* (Baltimore, 1936), 440. This work, hereafter cited as *Rom. Egypt*, is Vol. ii of *An Economic Survey of Ancient Rome*, edited by T. Frank. See *Currency*, Chap. ii.

¹¹ The abbreviation χ^a or χ^l may represent either $\chi\alpha\lambda\kappa\acute{o}\varsigma$, $\chi\alpha\lambda\kappa\acute{o}\upsilon\varsigma$, or, possibly, $\chi\acute{\alpha}\lambda\kappa\iota\nu\omicron\varsigma$. The distinction between copper and bronze in the translation is purely arbitrary. The "copper" standard is used as a convenient term to distinguish these payments in which the ratio of the baser metal with silver is indicated. See *Currency*, Chap. ii.

¹² Milne was the first to suggest that the chalcous was an accounting fiction, and the evidence of the Caranis tax registers gives this theory strong support.

¹³ *Currency*, 67.

¹⁴ P. Lond. 1171 (8 B.C.); P. Oxy. 736 (A.D. 1).

¹⁵ *Currency*, Chap. i. The Caranis tax register is P. Mich. 223-225.

¹⁶ P. Lond. 131.

¹⁷ Mommsen, *Archiv. f. Papyrusforschung*, i (1901), 273; Wilcken, *Grundzüge*, lxxv.

¹⁸ Weber, *Numismatic Notes and Monographs*, liv (1932). Weber cites Dattari for the existence of other hoards of denarii but without details.

¹⁹ Mommsen probably based his theory that taxes were paid in denarii on the ground that these alone could be sent to Rome in payment of the annual tribute.

²⁰ Whether or not the institution of the billon tetradrachm was due to Germanicus is uncertain. Tacitus would like to have his readers believe that the emperor strongly disapproved his son's visit to Egypt, but he is probably retailing anti-Tiberius gossip.

²¹ P. Mich. 121 verso i.6 (42); BGU. 1045 (154).

²² *Rom. Egypt*, 331; Clement, *Paedagogus*, ii. 3, 13.

²³ CIG. 5002 (A.D. 232); 5003 (235); 5008-5010 (244-248); 5009 (248).

²⁴ P. Giss. 47 (ca. 117).

²⁵ *Currency*, 75. To the five cited there may be added another hoard of twenty-six coins found at Alexandria as cited by Breccia, *Musée Gréco-romain*, 1925-31, 27. Breccia (*ibid.* 67) also describes in part the gold hoard found at Sakka.

²⁶ Augustan silver first appears in A.D. 36 (P. Oxy. 267). P. Ryl. 373, which mentions another instance, is dated by the editors in the reign of Tiberius, apparently on the basis of the writing.

²⁷ *Currency*, Chaps. i, ii and Tables ii and v.

²⁸ S. L. Wallace, *Taxation in Egypt from Augustus to Diocletian* (Princeton, 1938), 170. Cited *infra* as Wallace.

²⁹ P. Achmim 8 (197); Meyer, *Gr. Texte* 20 (early third century).

³⁰ P. Baden 37 (113); *Currency*, 181 and Chap. ix.

³¹ CIG. 5008, 5010. In *Byzantion*, xv (1941), 261, A. Segrè publishes a study in which he gives the value of the aureus as 125 drachmae, but he evidently arrives at this equation by misquoting Wilcken. There is a possibility, however, that this equation may be correct.

³² P. Oxy. 1411 (260).

³³ *Currency*, 68-69.

³⁴ P. Oxy. 705 (202).

³⁵ For prices see *Rom. Egypt*, 310.

³⁶ The money of Macrianus and Quietus was grudgingly accepted, although it was as good silver as that of Gallienus. See note 32.

³⁷ Some hoards, all of the third century, of Alexandrian billon outside Egypt have been reported as discovered in London, Jerbourg on Guernsey, Hesbaye in Belgium, Avennes, Pfyn, and Schwerzenbach in

Switzerland. Spot finds, mostly of the third century, have been reported from Britain, France, Switzerland, and the Rhine. See Blanchet, *Numismatische Zeitschrift*, Neue Folge, vi (1914), 193; *Currency*, 5, note 12. Neither spot finds nor hoards prove that the coins were in actual circulation at the reported place of finding; see Blanchet, *loc. cit.*

³⁸ See p. 50.

³⁹ See note 10. Analyses of isolated examples often show great variations in range of silver content. See the tables in Mickwitz, *op. cit.*, 40-41.

⁴⁰ Diocletian had no difficulty in returning to a gold standard and evidently found abundance of this metal still in the treasury. From Palmyra Aurelian brought back great wealth and is said to have deposited seven and one-half tons of gold in a single temple, probably the temple of the Sun.

⁴¹ Neronian coins in Egyptian hoards number 8,548 (or 610 per year); Hadrian, 2,045 (or approximately 100 per year of his reign). Relatively few denarii of Nero (391) have been found in the hoards, and apparently good silver was more often melted down than hoarded, while debased coins went into hoards.

⁴² The hoards of antoniniani are conveniently summarized by L. C. West, *Numismatic Notes and Monographs*, xciv (1941), 192. For the Alexandrian billon see *Currency*, Table vi.

⁴³ Eusebius (*Ecl. Hist.* vii. 21-22) gives an account of the plague at Alexandria. For the municipal expenditures of the cities see *Rom. Egypt*, nos. 431-6, 438; *Archiv*, iv (1908), 116 for waterworks and baths at Antinoopolis in A.D. 258.

⁴⁴ Some gold went to the East but probably much less than supposed. Pliny the Elder evidently knew the value placed on imported goods by the customs collected at the port of entry, and he knew the price such goods commanded in the Roman market after being "processed" by Alexandrian manufacturers, but there is no necessity to believe that these goods were bought with gold. The ostraca published by Tait from Myos Hormos show that goods of all kinds were sent from there to the East, and the *Periplus* lists materials acceptable at the various ports.

⁴⁵ The various attempts at currency reform under Aurelian are still not clearly understood. Probably the clearest presentation of the problem is found in H. Mattingly, *Roman Coins from the Earliest Times to the Fall of the Western Empire* (London, 1928), 128 ff.

LECTURE II

¹ When private accounts were kept, it was on some large estate. The farmer or shopkeeper was not concerned about keeping books.

² See p. 26.

³ *Currency*, 178.

⁴ See p. 19.

⁵ Diodorus gives the cost of rearing a child from infancy to the age of puberty as twenty drachmae. If he was quoting in terms of the Egyptian drachma in the age of Augustus, this would amount to five denarii (approximately five shillings or one dollar). For the cost of living in Roman Egypt see *Rom. Egypt*, 301.

⁶ *Ibid.*, 310.

⁷ *Rom. Egypt*, 310. The high prices from 45 to 47 and in 79 were undoubtedly due to famine conditions. If these are left out of consideration, the average price from 33 to 79 was three drachmae one obol. From 100 to 162 the average was eight drachmae.

⁸ In 155 the price was eight drachmae; in 162, eight drachmae two obols; in 183 (BGU. 200), eight drachmae. Of these the first and the last were fixed by the government as an *adaeratio* in payments for transportation. The high price of twenty drachmae in 191 was evidently due to famine conditions, and cannot be regarded as evidence of inflation since the average price for the early third century was much lower (*Rom. Egypt*, 310).

⁹ The quotation for 269 is found in P. Erl. 101. The evidence for 276 is found in *Trans. Am. Phil. Assoc.*, lxxvi (1945), 144 f.

¹⁰ P. Oxy. 2142 (ca. 293); P. Harris 93, Appendix (294).

¹¹ Rent of lockers (P. Giss. 50; P. Flor. 63). Sales of donkeys, *Sammelbuch* 8021; C. Wessely, *Studien z. Palaeographie u. Papyruskunde*, xxii. 16.

¹² For the details of the usurpers in Egypt see J. G. Milne, *Egypt under Roman Rule* (third edition, London), 1924, 72 ff.; cited *infra* as Milne, *Roman Rule*.

¹³ *Currency*, 148.

¹⁴ See p. 34.

¹⁵ L. C. West, *Numismatic Notes and Monographs*, xciv (1941), 4 ff.

¹⁶ The origin of this statement goes back to Finlay (*History of Greece*, Appendix II, 423 (Everyman's Library), who cited Cassius Dio lvii. 16 and *Scriptores Historiae Augustae*, *Severus Alexander*, 38 for his authorities. Dio says nothing about taxes, and the biographer of Alexander states that he reduced taxes to such an extent that, if a man paid ten aurei under Elagabalus, his tax was now a triens. Obviously such a reduction at this time was impossible.

¹⁷ T. R. S. Broughton, in T. Frank, *An Economic Survey of Ancient Rome*, iv, 880.

¹⁸ *Excavations of Dura-Europos*, IV, 141; barley, one denarius; meat and wine, four denarii; a dalmatic, forty to sixty denarii; a tunic, ninety denarii; a lodix, thirty-two denarii.

¹⁹ SIG. 890; CIL. x. 6012; xiv. 352 (A.D. 249).

²⁰ For a summary of analyses see *Rom. Egypt*, 440.

²¹ Silver hoards are conveniently summarized by West, *op. cit.*, 192.

²² Strabo xvii. 788.

²³ Cassius Dio lxxviii. 9.

²⁴ Wallace, 116.

²⁵ *Ibid.*, 281.

²⁶ A. von Domaszewski, *Neue Heidelb. Jahrbuch.*, x, 218.

²⁷ D. van Berchem, "L'annone militaire," in *Mémoires de la Société Nationale des Antiquaires*, x (1937), 117 ff. According to Herodian (iv. 4, 7), Caracalla granted the praetorians the whole of their food rations.

²⁸ The first mention of capita is found in P. Oxy. 43 (295). The ἐπιγραφὴ instituted by Diocletian in Egypt seems to have been a regularization of the assessment for supplying the army.

²⁹ O. Hirschfeld, *Die kaiserlichen Verwaltungsbeamten von Augustus bis auf Diocletian* (Berlin, 1905).

³⁰ The history of the third century is conveniently summarized in *Cambridge Ancient History*, Vol. xii.

³¹ See p. 9.

³² See note 10.

³³ Zosimus i. 61. The revolt of the moneyers (Script. Hist. Aug., *Aurelian* 38) was evidently a serious matter, to judge from the numbers slain. There does not seem to be any clear relation between this uprising and the inflation. The only "new" silver of Aurelian is the antoninianus with a new mark (XXI), but how it contributed to the security of contracts is not obvious.

³⁴ This seems to be established by the document published by A. E. R. Boak, *Harvard Studies*, li (1940), 50, where the adaeratio of military requisitions quotes the price for pistikion as 100 denarii per modius, and this is converted into Egyptian drachmae at the usual rate of a tetradrachm per denarius.

³⁵ The edict is published with text and translation in Tenney Frank, *An Economic Survey of Ancient Rome*, v, 310-421. An important fragment dealing with transportation is published in *Trans. Am. Phil. Assoc.*, lxxi (1940), 157.

³⁶ The ratio of 14.4:1 occurs in 379 (*Cod. Theod.* xiii. 2. 1). In 422 the ratio was 18:1 (*op. cit.*, viii. 4. 27). Justinian adopted the earlier ratio (*Cod. Just.* x. 78. 1). See *Currency*, 108.

³⁷ It is unknown whether the argenteus was fiduciary. The variation in weights of the siliqua under Constantine and his successors shows that this became a token coin.

³⁸ A. C. Johnson and L. C. West, *Byzantine Egypt: Economic Studies* (Princeton, 1949), 230. Cited *infra* as *Econ. Studies*.

³⁹ *Sammelbuch* 6086; P. Brem. 83; P. Oxy. 1653; PSI. 310; P. Thead. 33.

⁴⁰ *Numismatic Chronicle*, vi (1946), 111 ff. This suggestion is open

to serious objections. If it was adopted, the purchasing power of a pound of gold in 301 would have been 100 modii or thirty artabas of wheat. Under Augustus the same amount (forty-two aurei = 4,200 Egyptian drachmae) would purchase 1,000-2,000 artabas. In the sixth century a pound of gold would normally purchase 720 artabas. Since there was a good flood in Egypt when Diocletian published his edict, there was no reason for the high price set in it.

⁴¹ P. Oxy. 2106. The editors of the document regarded it as a tax assessment, but it seems to be in the nature of a requisition imposed on wealthy citizens and residents of Oxyrhynchus. See *Byzantion*, xv (1940-41), 275.

⁴² A. E. R. Boak, *Études de Papyrologie*, ii (1933), 1 ff.

⁴³ For prices of gold in Byzantine Egypt see *Currency*, 157 ff.

⁴⁴ *Loc. cit.*

⁴⁵ *Econ. Studies*, 175.

⁴⁶ *Currency*, 169.

⁴⁷ *Op. cit.*, 13.

⁴⁸ P. Ryl. Inv. 650 (*Currency*, 184). H. Mattingly (*Cambridge Ancient History*, xii, 338) suggests that the inflation of 301 was set off by reducing the coin marked XX.I to half its value. But that would make deflation and inflation the same thing.

⁴⁹ Wessely, *op. cit.*, xx, 85v.

⁵⁰ Nov. xvi (445).

⁵¹ P. Oxy. 1911, 2196. See *Currency*, 140. Procopius (*Anecdota* 25. 12) says that the bankers or money changers were accustomed formerly to give 210 obols or folles for a gold stater, but that Justinian and the Empress, contriving private gain for themselves, proclaimed that 180 obols should be paid for the stater, thus cutting off a seventh of the value.

⁵² P. Oxy. 1904.

⁵³ *Econ. Studies*, 218.

⁵⁴ *Cambridge Ancient History*, xii, 197. The term "middle class" needs definition. Presumably Alföldi excludes the curiales, who were landed proprietors on a small scale and men who would not be seriously affected by inflation alone. The merchant or industrialist (who was usually a merchant of his own wares) fared ill if he carried on business in fiduciary currency only.

⁵⁵ L. C. West, *Numismatic Notes and Monographs*, xciv (1941), 192 gives a convenient summary of third-century hoards.

⁵⁶ Alföldi, *loc. cit.*

⁵⁷ P. Oxy. 2106; *Sammelbuch* 6086; P. Brem. 83; P. Oxy. 1524; P. Thead. 33; P. Würzb. 15.

⁵⁸ In P. Oxy. 1905 assessments were made in denarii, in units of one gram of gold (one fourth of a solidus), and the solidus.

⁵⁹ M. Norsa, *Annali della Reale Scuola Normale Superiore di Pisa*, vi (1937), 1; *Econ. Studies*, 318 f.

LECTURE III

¹ Wilcken, *Grundzüge*, 270 ff., outlines clearly what is known about the classifications of land in Egypt. See also M. Rostovtzeff, *Studien zur Geschichte des römischen Kolonates* (Leipzig and Berlin, 1910); Grenfell and Hunt, *Tebtunis Papyri*, i, 538.

² The lake dwellings and terramara settlements were built by community organizations, but whether their agricultural lands were held in common is uncertain. Presumably the irrigations necessary for draining the Po valley required coöperation, but little more can be inferred from these settlements.

³ *De off.* ii. 21, 73: "non esse in civitate duo milia hominum qui rem haberent."

⁴ Cicero, *De re publica*, iii. 9, 16: "nos vero iustissimi homines qui Transalpinas gentis oleam et vitem serere non sinimus quo pluris sint nostra oliveta nostraeque vineae." Cf. Suetonius, *Domitian* 7.2; *Script. Hist. Aug., Probus* 18. There seems, however, to be clear evidence that Spain and Gaul were not wholly barred from viticulture (cf. H. Dessau, *Inscript. Lat. Selectae*, 1405).

⁵ The panegyrics of Vergil, Varro, or Columella should not blind us to the disregard of economic laws which were as effective in the ancient as they are in the modern world.

⁶ The recovery of industry may be explained in large measure by the establishment of the imperial troops permanently on the borders of the Empire. Thus the money tribute from the provinces was largely distributed at once to the soldiers, whence it flowed back to Rome in due course through provincial channels. This enabled Italian producers to compete on favorable terms with provincial traders, since the latter were not compelled to induce the return flow of money by underselling in the Italian markets.

⁷ R. G. Collingwood, *Roman Britain* in T. Frank, *An Economic Survey of Ancient Rome*, iii, 79 ff.; V. M. Scramuzza, *Roman Sicily*, *ibid.*, 351, 363 ff.; Albert Grenier, *La Gaule romaine*, *ibid.*, 494 ff.

⁸ For the coloni of Thrace see *Cod. Just.* xi. 52. 1; for Illyricum, *ibid.*, xi. 53. 1; Rostovtzeff, *Social and Economic History of the Roman Empire* (Italian edition) s.v. Tracia, Grecia; J. A. O. Larsen, *Rom. Greece*, in T. Frank, *An Economic Survey of Ancient Rome*, iv, 460-465; for Julius Theophrastus at Sparta see Woodward, *Annual of the Brit. School at Athens*, xxvii (1925-26), 26.

⁹ Tacitus, *Ann.* xiv. 22; xvi. 33; T. R. S. Broughton, *Rom. Asia* in T. Frank, *op. cit.*, 658, 663 ff.; F. M. Heichelheim, *Rom. Syria* in T. Frank, *op. cit.*, 147; Libanius, *De patrocinio*.

¹⁰ For imperial grants under the Julio-Claudians see Rostovtzeff, *op. cit.*, 339 note. Some additions may be made to this list but they are unimportant. For private ownership in the first century see the edict of Tiberius Julius Alexander, but these holdings were probably small and may have come from the sale of some imperial estates (see Collart, P. Bouriant 42). For the coloniae of veterans see Wilcken, *Grundzüge*, 403. These also seem to have been small, and very little is heard of them. For sales of land by the state see *Rom. Egypt*, 146 ff. The taxes on garden lands at Caranis are found in P. Mich. 223-225.

¹¹ P. Bouriant 42 (167), with an excellent discussion by Collart. Allotments of eighty arouras at Theadelphia (BGU. 1900) and apparently at Hermopolis (P. Flor. 50), where the rights in the κληροι are evidently transmissible by inheritance as if private property. For accounts of estates in the third century see *Rom. Egypt*, 213 ff. The correspondence of Heroninus and Alypius is published in P. Flor. ii; see also P. Ryl. 236-240. While Heraclides of Alexandria and others were chiefly interested in viticulture (with rather small areas probably yielding a good return) they paid some attention also to cereals (see P. Princeton ii, 37). But most of the land surveys and tax receipts of the period indicate that small holdings were the rule. The only clear evidence that crown land passed into private possession is found in *Sammelbuch* 7474, where Aurelius Heraclides of Alexandria seems to have acquired such ownership. For a large estate in Upper Egypt see O. Strassb. 662-771. There is nothing to indicate whether this is private or imperial. In general, the land surveys and tax receipts of the third century indicate that small holdings were the rule.

¹² Script. Hist. Aug., *Aurelian* 47.

¹³ For the ἐπιγραφή see O. Oslo. 22. A good sketch of Diocletian's system of taxation is to be found in W. Seston, *Dioclétien et la Tétrarchie* (Paris, 1946), 261. The edict establishing the new taxation in Egypt is published by A. E. R. Boak, *Études de Papyrologie*, ii (1933), 1 ff.

¹⁴ For an analysis of these declarations see *Econ. Studies*, 13. The διατίπσις first occurs in O. Fay. 23; cf. O. Mich. 463.

¹⁵ The Theadelphia register is found in P. Princeton 134. Nearly contemporary is an assessment for dalmatica on crown land at Oxyrhynchus (P. Oslo. 119, A.D. 319). The lease on crown land at Oxyrhynchus (P. Thead. 17, A.D. 332); sold as private property *Sammelbuch* 6612, A.D. 362; sacred land (P. Flor. 64); usiac land (P. Flor. 64; P. Cairo Pr. 4 A.D. 320; CPR. 19, A.D. 330).

¹⁶ Antinoopolis seems to have retained some land at Oxyrhynchus (PSI. 449), but this may have been part of a special endowment as the οὐσία Οὐλπιανή at Hermopolis (P. Flor. 71). The οὐσία Πλατωνική in the same document may be an error for some endowment by Plotina. The responsibility of the village for the cultivation of wasteland was clearly

recognized. See Kraemer and Lewis, *Trans. Am. Phil. Assoc.*, lxviii (1937), 357.

¹⁷ P. Flor. 71. For public land see Wilcken, *Grundzüge*, 288.

¹⁸ P. Oxy. 900.

¹⁹ P. Lond. 234 (Wilcken, *Chrest.* 179).

²⁰ *Cod. Theod.* v. 16. 34 (425).

²¹ *Econ. Studies*, 33.

²² BGU. 1630. The assessment of 750 myriads of denarii is most common. The amount of the assessment indicates a date in the latter half of the fourth century. A few names are Roman, but the majority are apparently those of Hellenized Egyptians, e.g., Ammonius, Apion, Nilus, etc.

²³ *Cod. Theod.* xi. 24. 1-6.

²⁴ *Op. cit.*, xi. 24. 6, of which part is repeated in *Cod. Just.* xi. 56. 1. For the law of Leo see *ibid.*, xi. 54. 1.

²⁵ Dioscurus: P. Cairo 67325; P. Flor. 298. Ammonius may have been the steward of Dioscurus and have kept his accounts (P. Cairo 67138-9). His own holdings were small (P. Cairo 67140²). The accounts of Theodora at Hermopolis were kept for four successive years (P. Baden 95; see *Econ. Studies*, 56). For Olybrius see P. Flor. 377.

²⁶ See *Econ. Studies*, 50 for an account of the estates of Apion. The single account of Christodora seems to have been found along with those of Apion, but that she was a member of his family cannot be proved.

²⁷ BGU. 836 (Wilcken, *Chrest.* 471).

²⁸ P. Cairo 67001-2. The register of taxes in P. Flor. 297 presumably comes from Aphrodito. The assessments were fairly uniformly levied under each heading, but some paid two, three, or more of these assessments; cf. P. Lond. 1673. The fines imposed on the possessors (κτήτορες at Spania (P. Oxy. 2058) range from a triens to two solidi. It may be objected that κτήτωρ in the late period did not mean owner or possessor, but there is no evidence that the meaning had changed. The term γεούχος seems to imply full ownership, but the title does not necessarily imply that the property was a latifundium.

²⁹ BGU. 836.

LECTURE IV

¹ M. Rostovtzeff, *Studien zur Geschichte des römischen Kolonates* (Leipzig and Berlin, 1910).

² P. Princeton 14.

³ P. Giss. 40.

⁴ P. Berlin Leihgabe 7 (163).

⁵ P. Lond. 257 (94).

⁶ Wilcken, *Grundzüge*, 290.

⁷ BGU. 560; cf. P. Fay. 123 for the drafting of Theophilus.

⁸ P. Lond. 1827. Tiberius Julius Alexander promised Alexandrians immunity from the liturgy of cultivating state land (and not unlikely many of them were quite incapable of any agricultural labor). Not infrequently in the Roman period transfers or mortgages of land and, at Oxyrhynchus, sales of houses carried the provision that the property was free from the obligation to cultivate state land. Apparently in years of a good flood, the state felt free to call upon anyone capable of tilling the land to help in the fields.

⁹ The epibole is discussed in P. Ryl. 202.

¹⁰ *Anecdota* 23. 15.

¹¹ *Political Science Quarterly*, xxxi (1916), 201; M. Rostovtzeff, "Origin of Serfdom in the Roman Empire," *Journal of Land and Public Utility Economics*, xi (1926), 198. A good summary of earlier theories is given by Roth Clausen, *The Roman Colonate: the Theory of Its Origin* (New York, 1925).

¹² A. E. R. Boak, *Geographical Review*, xvi (1926), 353.

¹³ P. Mich. 223-4.

¹⁴ BGU. 1630.

¹⁵ P. Oxy. 2058.

¹⁶ P. Flor. 71.

¹⁷ *Cod. Theod.* xi. 23. 1-6.

¹⁸ The letters from his archives are divided between London and Geneva.

¹⁹ P. Ross.-Georg. iii.8.

²⁰ The metrocomia does not occur in any Egyptian document. When the Theodosian Code was compiled, the term may have been applied to the ancient metropolis of the nome, which had apparently lost much of its importance in the fifth century.

²¹ The attempt to evade the law by fictitious sales or leases was the object of special legislation in 441. This law repealed by Leo in 468 was taken over by Justinian (*Cod. Just.* xi. 54. 1). The editors of P. Lond. 1796 cite it as an attempt to evade the law.

²² *Cod. Theod.* v. 16. 34 (425).

²³ *Trans. Am. Phil. Assoc.*, lxviii (1937), 357. Private land abandoned by the owners was assigned by the pagarch to the villagers, who cultivated it until the owners returned and reclaimed it. This was evidently marginal land which could not be profitably cultivated when irrigation was difficult, or impossible because of neglect of the canals or when floods were low.

²⁴ *Cod. Just.* xi. 48. 6 (366).

²⁵ *Op. cit.*, xi. 52. 1 (de colonis Thracensibus).

²⁶ *Op. cit.*, xi. 48. 11, 20-24.

²⁷ *Op. cit.*, xi. 48. 19.

²⁸ P. Oxy. 2058.

²⁹ P. Oxy. 2195. Eighteen tenants pay seventy or more artabas as

rent or taxes, the highest 126½ (Phoebammon, lines 54-5). In the private contracts of lease in the sixth century the average rental of twenty leases is thirty artabas, with the highest 120 (*Econ. Studies*, 74).

³⁰ P. Cairo 67093; cf. P. Cairo 67095; P. Flor. 93.

³¹ P. Oxy. 1983 (535).

³² See *Econ. Studies*, 29 ff.

³³ Tenants could apparently transfer from one estate to another (P. Oxy. 2055).

³⁴ P. Oxy. 126, 1887; P. Cairo 67117-9, 67329.

³⁵ Probably the transfer of peasants to abandoned lands was made in years of good floods, when some of these fields could be cultivated to advantage, but it is questionable if such transfers were made from good to poor lands as a temporary expediency.

LECTURE V

¹ Sextus Aurelius, *Epitome*, Chap. i.

² Wallace has the most complete survey of taxation in the Roman period.

³ Script. Hist. Aug., *Aurelian* 47.

⁴ The numbers recorded in the *Res Gestae* afford no clue to the population of Rome in the third century. The plagues of this period must have reduced the population, although there is no evidence that Rome itself, well nourished and well watered, suffered therefrom.

⁵ συναγοραστικός πύρος. See Wallace, 22, 365. For other taxes in kind see *ibid.*

⁶ Wallace; see indices for the various taxes and impositions in Roman Egypt. For the military annona see D. van Berchem (*Mémoires de la Société Nationale des Antiquaires*, x [1937], 117 ff.), who holds that Septimius Severus established the system whereby the legionaries were paid in kind, and that the municipal senates were established in Egypt to make the senators responsible for the collection of the annona. However, the amount required to supply the small force kept in Egypt in the third century (12,000 legionaries would require 144,000 artabas, which would represent approximately one choenix per aroura) was scarcely sufficient to require such drastic measures. Requisitions may have become more serious when there were heavy troop movements in civil wars, or when troops were sent to suppress raids of the Blemmyes. But in general there is little evidence that the tax for the military annona in Egypt was ever very important.

⁷ The fullest discussion of the poll tax is found in Wallace. See this work for the discussion of the various rates and exemptions. In the excellent indices prepared by Youtie and Pearl on the tax registers from Caranis it may be noted that very few men who paid taxes on garden land appear in the list of poll taxpayers.

⁸ The taxes are listed by Wallace. F. Oertel (*Die Liturgie*, Leipzig, 1917) gives a good survey of the liturgies.

⁹ For the census declarations see Wallace, 392. The last cited belongs in 258 (Wessely, *Studien z. Pal. u. Pap.*, ii, p. 32). A registration of children in the twelve-drachma class at Oxyrhynchus in 291 (P. Cornell 18) is presumably for the social qualifications of admission to the gymnasium class. The last mention of liability for census registration in house sales is P. Oxy. 1276 (249), but this clause is omitted in P. Oxy. 1284 (250), P. Leipz. 3 (256). The receipt for poll tax in 213 (Theb. O. 86) seems well attested; probably also in 222 (*Sammelbuch* 5677). Tait gives 243 as the date of O. Strassb. 118, but, as Wallace points out, although Aurelii are rarely found before Caracalla's edict in tax receipts, Aurelii are not unknown before that date. The assessment (*μερισμός ἀνδριάντων*) is not found after 162.

¹⁰ P. Oxy. 1662 (246). The chief magistrate of Oxyrhynchus goes to Alexandria to meet the prefect apparently to ask for a rebate on an assessment imposed (*περί τῆς ἐπιβληθείσης ἐπιβολῆς τοῦ ἱεροῦ ἀποτάκτου*). Cf. O. Mich. ii, 752: sixteen drachmae *ὑπὲρ ἀποτάκτων*, W. O. 1472 (255); four drachmae paid for an epibole of two talents (but in the *Berichtigungsliste* it is suggested that this is an assessment of four drachmae on two *arouras* of land).

¹¹ Tax on trades: BGU. 1087 and *Archiv*, v (1913), 273 (276); cf. P. Oxy. 1517.

¹² O. Mich. 131-2.

¹³ For the evidence for the *ἐπιγραφή* see O. Oslo. 22. The freight was paid by the taxpayer. In a receipt for wine a charge for *ἀφυλισμός* is noted, which Professor Youtie suggests is a supplement for filtering the wine. In one case it seems to be a charge of eight drachmae per month, but in another it may be 10 per cent of the assessment (fifteen *sestarii* for the *ἐπιγραφή*, one and one-half *sestarii* (?) for the *ἀφυλισμός*, O. Mich. 802; *Trans. Am. Phil. Assoc.*, lxxi (1940), 634.

¹⁴ A. E. R. Boak, *Études de Papyrologie*, ii (1933), 1 ff. The translation is that given by the editor.

¹⁵ On the institution of the indiction cycle see E. H. Kase, Jr., *A Papyrus Roll in the Princeton Collection* (Dissertation, Baltimore, 1933). The first example of *διατίπσις* is found in O. Fay. 23 for payment in kind. For money payments E. G. Turner suggests this restoration in Kase, *op. cit.*, Cols. iii, 4, 23; v, 9.

¹⁶ P. Leipz. 84.

¹⁷ Kase, *op. cit.* The variations in the tax in kind seem to indicate that no rate was fixed for the whole period of an indiction cycle. From 315 to 319 inclusive Thaeis paid approximately the same tax, but in the next five years the variation seems to have been yearly.

¹⁸ In Kase, *op. cit.*, the payments of barley were often made *ἀναμείψως*,

which probably meant that these were exacted without any right of adaeration. The readings ἀργ(υρικῶν) in Cols. iii, 7; v, 10, 13 are uncertain.

¹⁹ A. Segrè (*Byzantion*, xvi, 1942-43, 395) estimates the civic annona from Egypt at 2,000,000 artabas, but his calculations are highly conjectural.

²⁰ *Econ. Studies*, pp. 215 ff.

²¹ A. E. R. Boak, *Harvard Studies*, li (1941), 35.

²² Bott, *Die Grundzüge der diokl. Steuerverfassung*; Piganiol, *L'impôt de capitation sous le Bas-Empire*; Seston, *op. cit.*, i, 261; Déleage, *La capitation du Bas-Empire*.

²³ *Sammelbuch* 7673; P. Strassb. 42.

²⁴ P. Goodspeed 12 (Wilcken, *Chrest.* 253). Wilcken suggested that the units might have something to do with the capita.

²⁵ BGU. 21.

²⁶ *Sammelbuch* 7756.

²⁷ *Econ. Studies*, 227.

²⁸ For a survey of taxation in this period see *Econ. Studies*, 230 ff.

²⁹ P. Cairo 67057. For a more detailed analysis of this document see *Econ. Studies*, 275.

³⁰ This calculation is based on the assumption that the rebate of taxes amounted to one fourth the annual assessment in money, and also that the fee of two carats per solidus had already been deducted by the collector.

³¹ P. Lond. 1670 (ca. 570).

³² P. Oxy. 1911, 1912, 2195; P. Baden 95; see *Econ. Studies*, 272.

³³ *Op. cit.*, 269.

³⁴ *Op. cit.*, 262.

³⁵ *Op. cit.*, s.v. διαγραφή.

³⁶ P. Amh. 70.

³⁷ The potamitae employed in Apion's estate received wages for work on embankments, and the charges for naubia were met by the estate; cf. *Econ. Studies*, 10 ff.

³⁸ S. Riccobono, *Fontes juris Romani* (Florence, 1941), ii, 795. Furlani's version of the Syrian-Roman law gives 225 (220 in text an error?) perticae of mature olive grove or two and one-half iugera as one iugum. The previous editors gave 225 mature olive trees as one iugum, and 450 olive trees on the hillside as one iugum. Whether the sixty iugera of τριτη γῆ should be taken as "wornout" land, or simply as a third classification of arable land, is uncertain. The former seems more probable (why would the Syrian translator render the adjective "third" in its Greek form?). Furlani's rendering of the description of mountain land is obscure, and its relation to the tax unit is far from certain. The phrase "quanta terra comprehendit μῶδιον frumentorum vel hordeorum

in monte" might mean that the land on the mountain side which produces a modius of grain is equivalent to a iugerum, but would land yielding sixty modii be taxed a full annona? The tax on pasture land seems to imply that the stock paid a per capita tax of one, two, or three denarii, but does this mean that pasture land was divided into three classes according to the quality of the pasturage, or that sheep, goats, or cattle paid a different tax? The value of the annona and of the denarius at this period is uncertain. See *Econ. Studies*, 218.

³⁹ The Edict of Tiberius Julius Alexander promised immunity to the land of the Alexandrians, and citizens of Antinoopolis enjoyed certain privileges and immunities, although the latter may already have disappeared.

⁴⁰ Seligman (*Essays in Taxation*) offers a good criticism of the general property tax and the single-tax theory.

⁴¹ *Econ. Studies*, 273.

⁴² The taxes in kind imposed by Aurelian on papyrus, glass, and linen were a blow to private industries. The grant of a dole by Diocletian indicates a decline in industry, and if the dole was continued, it was due largely to the fact that recovery had never been attained. The letter attributed to Hadrian (in Script. Hist. Aug., *Saturninus* 8) is evidently a forgery of the time when this biography was written and probably reflects some period in the fourth or the early fifth century.

LECTURE VI

¹ *Cod. Just.* xi. 56 (468).

² *Econ. Studies*, 94.

³ The twelfth year of indiction (P. Cairo 67058, Cols. i, ii): thirteenth year (*ibid.* Cols. iii, iv); fourteenth year (P. Cairo 67056 and 67058, Cols. vii, viii ?); first year (P. Cairo 67287); ninth year (P. Cairo 67330). The editor of P. Lond. 1670 suggests that it belongs to P. Cairo 67056. It may belong to the same roll, but it is not part of the accounts for the fourteenth year. Both have entries for the third payment of the military annona and the total of receipts and expenditures is different. (In P. Lond. 1670 the receipts were 522 solidi, expenditures 533 solidi. The payment for the third installment of the annona was twenty solidi twenty carats, in P. Cairo eighteen solidi.) In P. Cairo 67287 restore [γ' καταβολή] in place of [τῷ ἀκτουαρ(ῶ)] in Col. i, line 7.

It is possible that P. Flor. 297 contains the tax register of Aphrodito for the third (?) year of an indiction. In lines 461 ff. we seem to have the budget for the following year, but the canonica (ninety solidi), annonae (159 solidi), and gratuities (sixty-two solidi) seem out of line with other Aphrodito accounts. Direct payments of annonae to the provincial treasurer are recorded in P. Cairo 67038-9, 67043.

⁴ Deficit made up by Apollos (P. Lond. 1670). The order for payments in P. Lond. 1667, 1668 may be to reimburse the protocometes.

⁵ *Econ. Studies*, 237.

⁶ *Op. cit.*, 222.

⁷ *Op. cit.*, 94.

⁸ *Op. cit.*, 275.

⁹ P. Oxy. 1907. There was a general rebate on the taxes in gold except for 300 solidi (more or less). If the latter was for the local bureaucracy, it would explain why there was no rebate.

¹⁰ But see Wilcken, *Grundzüge*, 76 ff. I question whether P. Leipz. 64, 45 (τῆς πόλεως καὶ τῶν κομῶν τῆς ἐνορίας τῆς ὑμετέρας) affords any proof that the nome had become municipal territory. The municipal senators were appointed to the liturgy of praepositus pagi, but it may be doubted if this proves that the pagus was a part of the city territory.

¹¹ *Rom. Egypt*, nos. 429-439; *Archiv*, iv (1908), 116. The source of these funds is unknown. Hermopolis sent an embassy to Rome about this period, but whether or not it was for money is unknown. With the high price of wheat the Egyptian farmer was prosperous and contributions probably came from wealthy citizens and senators (cf. P. Lond. 1177 for contributions by municipal officials for the water system; see P. Oxy. 1496, 2127).

¹² P. Oxy. 1413, 1414.

¹³ P. Amh. 70.

¹⁴ CPR. 20; Wilcken, *Chrest.* 402.

¹⁵ Eusebius, *Eccl. Hist.* vii. 21. Eusebius quotes a letter of the Bishop Dionysius (ca. 247-265) describing the desolation of Alexandria. The plague was perhaps more virulent because of the industrial depression. But the story of the list of people on the dole leads to the suspicion that Eusebius had interpolated from his own time, after Diocletian had granted the dole to Alexandria.

¹⁶ P. Oxy. 1411 (260).

¹⁷ Milne, *Roman Rule*, 73.

¹⁸ Script. Hist. Aug., *Triginta Tyranni* xxii.

¹⁹ Milne, *op. cit.*, 74 ff.; *Cambridge Ancient History*, xii, 301 ff.

²⁰ P. Mich. iii, 214-221 (Winter).

²¹ For the older theories see *Cambridge Ancient History*, xii, Chap. ix. W. Seston (*Dioclétien et la Tétrarchie*, 137) establishes the chronology of the revolt, using the letters of Paniscus. [Since writing these lectures I have had occasion to study the ostraca from Caranis dealing with grain transport, and I have modified my views on the chronology of the revolt. See *Class. Phil.*, xlv (1950), 13.]

²² Seston, *op. cit.*, 137.

²³ *Anecdota*, 26. 40. The falsity of Procopius is revealed by his account of the dole, which he places at 2,000,000 medimni (enough to

feed 300,000 people). In Edict xiii Justinian makes the alimonia of Alexandria a principal charge on the Augustalis.

²⁴ *Sammelbuch* 7756.

²⁵ The land register of Hermopolis (P. Flor. 71) mentions a small amount of γῆ πολιτική, which may be land of Alexandria. The οὐσία 'Ερμοπολιτική in P. Leipz. 101 is very small. Antinoë had some land at Oxyrhynchus, probably part of an old endowment (PSI. 449).

²⁶ See p. 119.

²⁷ Wilcken, *Grundzüge*, 74; Milne, *Roman Rule*, 145.

²⁸ *Cod. Just.* i. 27. 1. 40.

²⁹ SEG. ix. 356, 414 (501).

³⁰ Maspero, *Organization militaire de l'Égypte byzantine* (Paris, 1912); *Econ. Studies*, 215.

³¹ P. Cairo 67057. Possibly the reading *ovrsurs* should be restored as *ovssurivovl*.

³² For the annona and capita in Egypt see *Econ. Studies*, 218.

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